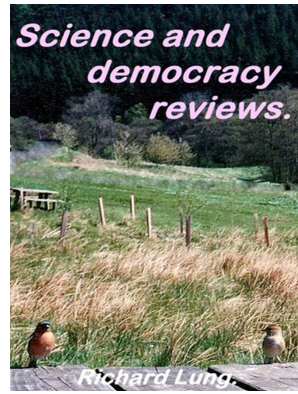




*Science and
democracy
reviews.*

Richard Lung.



Science and Democracy.

reviews

Commentaries, book 2.

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Science and Democracy reviews.

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Preface.

This is the second book of a short series of Commentaries. The first, Literary Liberties, also has a considerable democratic content. They are both, mainly, collections of reviews. But the way they came about is quite distinct. They were of different intent and different in nature.

The core of the literary reviews were written in preparation for chatting with the local book club. That was when book clubs were new. Mass entertainment was producing movies and tv series about them. Discussing novels was a novelty.

As is to be expected, the novelty wore off, and I stopped reviewing even works that were well worth the trouble. In any case, I only reviewed books that I could appreciate. If my reviews helped any author, in some small way, that was all right. I didn't see any point in doing any-one down.

To supplement these reviews of modern writers, I made the effort to draw on my fading memories of some favorite writers in my youth. These tended to be democratic in out-look, and, if there was one respect, in which I was negative, it was towards negativity, so successful in blocking genuine reform, if not the many shams and impostures.

At about the turn of the century, indeed the turn of the millennium, when I was getting to know a little of contemporary literature, I determined to get some idea of where physics was going.

I didn't just review popular expositions, for relaxation and enjoyment, I studied them, to get as clear an idea as possible as to their thinking.

This was all the more necessary, given that the physical theories are built on a framework of cutting-edge mathematics, which I could not hope to understand.

This is why I decided to move, to near the end of the book, the most difficult reviews, that perhaps attempted too much detail of the works of Barbour, and, to a lesser extent, of Greene, and even Smolin. My middle-aged commentaries, in places, need more concentration than my old head always was willing to give.

The central problem of theoretical physics remains to construct a unified theory that seamlessly includes gravity with the other three known forces of nature, electro-magnetism, the strong and weak nuclear forces.

Michael Faraday and James Clerk Maxwell had united electricity and magnetism, in the nineteenth century. Abdus Salam and Steven Weinberg combined electromagnetism and the weak force, in their electro-weak theory, verified at CERN, with the discovery of speculated "heavy photons," whose role would replace that of the photon in electromagnetism or light. Later, the new large hadron collider, further discovering the Higgs particle, did much to substantiate the so-called standard model, which further includes the strong force.

The standard model developed a quantum chromodynamics, analogous to quantum electrodynamics. "QED, the strange theory of light and matter" is the title of a superb popular book by Richard Feynman to explain his theory, which combines the classical theory of special relativity with quantum mechanics.

This leaves trying to reconcile quantum mechanics with general relativity. The core of this book is a study of some few attempts by physicists to convey this work to the general public.

Over-shadowing that endeavor was the emerging suspicion that about 96% of the universe is composed of a previously unsuspected dark matter and dark energy, which responds to gravity but not electromagnetism. Hence the characterisation, dark. The motions of the galaxies could not be explained without it, short of changing the known laws of motion, given by Newton and Einstein.

Einstein theory of general relativity slowly became comprehensively substantiated, especially after Roger Penrose made its mathematics more accommodating for physicists.

This amateur found its technicalities too difficult to follow, beyond popular accounts, to say nothing, of subsequent pre-occupations like string theory.

General relativity was couched in continuous terms that could be extended indefinitely, such as to the infinitely dense points, known as singularities, that mass was supposed to collapse into, in a black hole, a collapsed star under pressure of its own gravity, once the nuclear reactions, by which stars eventually build-up, (what we know as) the chemical table of elements, have given out.

This conception of the singularity as a dimensionless point is incompatible with quantum theory, which deals in discrete quantities, known as quanta (or as I would say, quanta) which are always a multiple of a basic unit, subject to no further division.

In 1900, Max Planck discovered that radiation energy could only be explained in discrete terms of a basic quantum of energy. By the end of the century, physicists were attempting a comparable endeavor of

explaining space and time in terms of discrete units, associated with theories of quantum gravity.

I don't understand these things, of course, but some idea, however limited and imperfect, was better than blank ignorance and indifference to all attempts to follow the advances of natural science.

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John Davidson: The Gospel of Jesus.

In Search of His Original Teachings.



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The Gnostic Jesus.

I once read a collection of essays on mysticism by great physicists. One can understand why the founders of quantum mechanics would be mystified! John Davidson, also a physicist by profession, has gone further, with a great research into a sort of faded halo of almost lost texts surrounding the teachings of Jesus, together with an authoritative study of the nature of mysticism.

Other revolutions in Jesus scholarship seek to reveal a Jesus hidden from history: a survivor of crucifixion; a shroud imprinter; an Eastern sojourner; as well as an iconoclast, of ritual Judaism, for equality before God, etc.

John Davidson seeks another hidden Jesus, the gnostic teacher. The gnostics claimed that Jesus taught a secret lore (hinted-at in canonic scripture). They were suppressed as heretics, and little known of their writings, till the sensational find at Nag Hammadi, in 1945.

Davidson draws freely on these and other ancient non-canonical texts, explaining their mystical inspiration.

The first part of *The Gospel of Jesus* reads like any historian concerned to show how the canonic, indeed all, writers were subject to human error creeping into the manuscript copying, and to human limitations of understanding what they were writing.

Nor were the gospels life stories of Jesus. They had other concerns at heart. So, they cannot be taken for granted as historical documents. It makes sense to follow the evidence, critically, across prescribed lines.

A good introduction by Ian Wilson, *Jesus, the Evidence*, does just this.

The extant Christian gospels, from before the end of the second century, but not in the Bible, may be obtained from Andrew Bernhard (earlygospels.net). Not being a mystic or having any experience in that line, I didn't see their significance, till reading Davidson.

His volume of over one thousand pages breathes new life into many suppressed, neglected, forgotten, damaged or fragmented manuscripts.

This background of mystic knowledge or gnosis is used to throw light on the less obvious of Jesuses purported sayings, especially in the spiritualised gospel of St John.

Davidson claims that Jesuses teachings are consistent with what other mystics have taught. There is a greater reality than that of every-day life, just as tidal froth is not the whole existence of an ocean, tho it might seem so to beach dwellers.

He gives examples of the "oceanic feeling," mystic experiences of vastly expanded consciousness and well-being, reminiscent of William James, on *The Varieties of Religious Experience*.

John Davidson, in earlier books, *Subtle Energy* and *The Web of Life*, combined traditional Indian meditative experience with Western fringe science of the bodys energy fields. Davidson was a

Cambridge physicist. But he was not just talking about human auras as electro-magnetic fields, akin to the Earth's aurora. Rather, the implication is there are higher or subtler, less gross manifestations of existence, than the material one we are so absorbed in.

One of the introducers to these books admitted he didn't relate well to the oriental terms. (Neither did I.) I think he meant the "chakras" and the like. As Carl Jung said, we in the West are like children compared to Eastern understanding of mind.

These earlier books put me off, at first. But the style of *The Gospel of Jesus* is accessible. There is no mystical or scientific jargon. Instead, Davidson introduces mysticism to us, thru the spiritual teacher the West is most familiar with.

The start of chapter 27 sums up:

In our exploration of his teachings, we have seen that Jesus taught some simple, fundamental mystic truths. God is to be found within, he said; the path to him is that of the Word; the Word is to be contacted through the "Word made flesh," a living Son of God, by means of mystic baptism and spiritual practice. And, while practising these spiritual exercises, a certain way of life and mode of conduct is required. This, in essence, is the mystic teaching of Jesus and of all the other great mystic Saviours.

Now that Davidson has substantiated this thesis with such a wealth of corroboration, really a much shorter book would not come amiss, to spell out the above quotation. I am not qualified to do that. However, a few words about the above terms and conditions, of the mystic path, may help. My comments are just one uninitiated person hazarding at meanings. They are not meant to be taken as

authoritative, or even necessarily right. Everyone can try their own definitions.

God is to be found within.

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God is the unified strength of love beyond imagination or sense. Hence "within" us, in a manner of speaking, because our logic and perception can only put together a view of the world in parts, rather than a god-like omniscience of seeing the whole picture. God is beyond all the categories of space and time, life and death, mind and matter, or whatever.

The Word.

The Word is familiar from the beginning of St John gospel. Davidson describes it as the creative power of God, for which he provides many other metaphors from the ancient mystical literature.

Throughout history, God's creative Power has been called by a multitude of names and expressions. Amongst the Christian and allied literature alone, it has been called the Word of Life, the Word of God, the Creative Word, the *Logos*, the Image of God, the Wisdom of God, the Voice of God, the Cry, the Call, the Holy Name, the Holy Spirit, the Holy Ghost, the Power, the *Nous*, the Primal Thought, Idea or Mind of God, His Command, His Law, His Will and His Ordinances.

In the metaphorical language so beloved of the Middle East, it has also been described as the Living Water, the Bread of Life, Manna from Heaven, the Breath of Life, the Medicine of Life, the Herb of Life, the Tree of Life, the True Vine, the Root, the Seed, the Pearl, the Way, the Truth, the Letter and many other figures of speech.

The "Word made flesh," a living Son of God.

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God sends his dearly beloved Son, a soul, who is his perfect representative, into the world, in human form, to save or redeem souls trapped in the material cycle of existence. The mystic view is that the body is a prison, we are all too willingly jailed-in by our passions. These are for short-lived pleasures, that usually have a down-side, leave us dissatisfied, are subject to diminishing returns, which may lead to hopeless misery, unless our lives can somehow be turned around.

Why do we need a Savior if life is so short, anyway? For Davidson, the answer is that the death of the body is not the end of our problems. We are immortal souls, and the passions, that consumed our minds, continue after we lose the body to temporarily satisfy them. Inevitably, those worldly passions draw us back to further corporeal existence. The baser the passions, the baser the existence.

Davidson concurs with the doctrine of reincarnation, to the extent that ones sins may transmigrate ones soul even into the body of a lower animal. He does point out that some animals are perfectly loving and true, whereas many humans are "bestial." Presumably,

their souls would swop bodily forms, in the karmic scheme of things. But how reincarnation might work leaves much to be understood.

The largely successful but illegitimate banishment of reincarnation from official Christianity is discussed in *The Original Jesus* by Gruber and Kersten.

(They describe the tremendous extent of the Buddhist mission and compare similar teachings to those of Christ, tales of whom are astonishingly anticipated, re the Hindu Krishna, as well as by other religious legends.)

Davidson says that every mystic had a master. To escape from the prison of the body, while we are still alive, is "an outside job." It needs the help of a Savior to show us the escape route. And ones lifetime is the only chance to effect that escape (normally taking innumerable lifetimes). After death, a souls unreformed mind is simply drawn back to its spiritual level of corporeal existence.

This resembles those prisoners, who have become institutionalised. When they are set free, they simply stay where they are, or gravitate back to their old haunts. Or, if that is not permitted, they get themselves re-committed.

With regard to needing a master to spiritually reform ourselves, Davidson says:

If we advise others to do something which we do not do ourselves, then it is unlikely to have much effect. As the saying is, example is better than precept. Masters are always perfect examples of everything they teach. Hence, if a Master is to teach the necessity of a Master, it is necessary for him to have a Master, too. Later followers characteristically like to portray their Master as if he had no Master, for they do not like to think that their Saviour was ever in need of help himself. But in order for a

Master to convince others that in order to find the kingdom of God it is necessary to have a Master, he himself must have a Master. Otherwise, his own life would contradict his teaching and few discriminating people would believe him.

Mystic baptism.

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In *Gospel Truth*, Russell Shorto discusses this process, with John the Baptist in the role of Jesus's inducer. "The Big Dipper," as he calls him, introduced baptism, as a cathartic experience for the purging or cleansing of sins. Unlike the costly animal sacrifices at the Jerusalem Temple, John baptised in the holy river Jordan to redeem the pious poor. This alleviating their grinding poverty, no doubt, made the exploiting authorities his enemy. Jesus would be under suspicion, by association with the Baptist, and also destined for execution.

In his attitude to baptism, as well as the gospel healings, and indeed to the crucifixion, Davidson reveals himself to be a true son of the ancient gnostics. Like them, he is only interested in the existence of a spiritual Christ after the crucifixion. The orthodox tended to think in terms of a physically resurrected Jesus. This may be because Jesus was secretly revived but superstition triumphed over the nature of his re-appearance.

Hence, Christian graveyards, where the bodies of the dead are all laid out, to rise again on the day of judgment.

For Davidson, this question, of Christ's prolonged stay on earth, would be a minor matter compared to Jesus, as the holder of the keys to eternal life.

The author substitutes physical happenings for spiritualist interpretations of them. Submerging or sprinkling people in water -- what good does that do? He reasonably asks. Religious ritual is regarded as a forgotten remnant of spiritual practise, which alone makes possible profoundly blessed other-worldly experience.

One interpretation of baptism is as symbolic of re-birth, not merely in physical water, but in the Living Water of heaven, achieved by initiation into the spiritual mysteries.

Spiritual practise.

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Davidson views miracles as a Masters ability, as Gods agent on earth, to re-create things. His sense of miracles is that they are both grandiose and largely futile:

As fascinating as it may be to witness physical miracles, the simple fact is that miracles in themselves do not confer spirituality. Spirituality comes through spiritual practise, through purification of the mind and the cleansing of its myriad impure tendencies, freeing it from the force of many ingrained habits. How can simply witnessing a miracle do that? Nor do miracles confer true faith in and reliance on God. Faith in God develops naturally as the ego is worn down.

It is understandable, then, that Davidson has no time for whether the still mysterious Turin shroud is genuine.

Davidson believes the Savior is more concerned with spiritual healing than healing the body, which soon dies, anyway. This gnostic transcendentalism perhaps loses touch with Jesuses humanity. As

both Ian Wilson and Russell Shorto say, some of Jesuses miraculous cures are recognisable from modern cases of faith healing, hypnotism and exorcism. Some patients may have called to be released from psychosomatic and multiple-personality disorders, that oppressed them.

However, the gnostic John Davidson sees most significance in the mystics, including Jesus, using the miracles --

as metaphors for spiritual truths. We are all spiritually blind, deaf and dumb. We are crippled and have forgotten how to walk straight in this world. We are carrying a heavy burden of weaknesses and sins from which we need to be healed. Our will power is paralysed and withered by our attraction to the world of the senses. In fact, we have become spiritually dead and full of darkness -- we need to be raised from the dead, to come out of the tomb of the body, not after four days but after many ages. Spiritually, we "stinketh" with the accumulated sins of many lifetimes!

To accomplish this, we need a spiritual physician to help us overcome the feverish activities of the mind, to learn how to walk upon the stormy waters of this world, to cast out the devils and demons of human weakness from within ourselves and to overcome the Devil himself. With the help of a Son of God, we must bathe in the pool of Living Water and come up healed after many years of infirmity without anyone having previously helped us to take that dip. We need to eat the true Bread of Life and to drink the wine of divine love at the marriage of the soul with God.

True mystics are not looking for a following but for disciples dedicated to finding the mystic reality. In terms of the parable of the sower, they are looking only for the seed that bears fruit.

It is not enough, Davidson says of those who think they just need to gen-up on all the spiritual practises:

They would have no one to oversee the repayment of their *karmic* debt, no one to meet them on the inside, no one to guide them externally or internally if they got into difficulties, no one to shower blessings and inspiration upon them in so many ways. They would be trying to climb to the top of an unknown mountain on their own, without real knowledge of the way or how to climb, and they would be likely to get lost or worse. To go adventuring into the realms of one's own being without the guidance of one who knows the way is simply foolhardy.

But what form of spiritual practice or mystic prayer do the Masters teach? Mystics say that the headquarters of the mind and soul in the human body is in the forehead, immediately behind and above the two eyes. This focus of attention has hence been called the eye centre, the centre of consciousness or the thinking centre...But there is nothing physical about its "location"...It is a mental or subtle centre.

From this point, the attention drops down into the body, spreading out and scattering into the world through the sense organs and the organs of activity. And the more a person's attention strays away from this centre of consciousness, the less is their awareness and consciousness of what is happening to them. Consequently, the more a person is scattered into the world, the less do they realise it. This is a dangerous situation.

Davidson continues that even when the body is exhausted, the mind goes on, in waking or in sleep, subconsciously or in dreams, obsessing one with the world.

To train the mind from running wild, a meditation, such as mentally

repeating certain words, is practised with the attention fixed at the eye centre.

Davidson compares this "labour" of the mind to a child unwilling to go to school but eventually unwilling to leave higher education.

Nevertheless, it only takes a "degree of concentration and stillness, even of the body" for consciousness to withdraw from the body, towards the eye-centre. There follows a description of the beginnings of how "by degrees, the soul and mind leave the body and enter the astral realms." It is like death, except the meditator is in control and still connected to the body.

Meditation is in fact a metaphorical "death," becoming dead to the desires of ones senses. *Luke* is quoted:

If any man will come after me, let him deny himself,
and take up his cross daily, and follow me.

Crucifixion was a slow torture to death. Likewise, in daily meditation one denies oneself and "dies" to the temptations of the senses.

Davidson says Jesus describes this meditation on the eye centre, as "if thine eye be single, thy whole body shall be full of light"; but an unscrupulous mind, polluted with worldly ambitions, finds it "full of darkness."

As the "single eye" leads to the "astral worlds," mystics, such as Jesus, liken it to a "strait" and "narrow" "gate." That is why "it is easier for a camel to go through the eye of a needle than for a rich man to enter into the kingdom of God." That is to say a man encumbered by the possessions and desires of this world, which he cannot take with him to another world.

The gate is also called a door. Meditation is the knocking on that door, that comes from seeking God. As usual, Davidson quotes from canonic and non-canonic mystic texts, to point-up the moral. Seek and you shall find, because the seeking means that God meant you to find. Indeed, the Master or Son of God, may be waiting on the astral side of that door, and himself knock to see if there is an aspirants soul ready to enter, to be taken thru the mystic realms, back to God.

Hence, the parables that enjoin the servants to be ready for the unexpected return of their Master.

Way of life and mode of conduct.

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To reach God means becoming one with the one God, the ultimate reality. Hence, the need to love God and ones fellow creatures. Whereas, the ego, partial for things of this world, is only a "counterfeit self," that does not truly represent God, but is like a phoney politician, who puts personal and partisan ambitions before the general interest.

This applies to all of us, of limited sympathies. The imprisoned love, that is pride or tribalism, acts out desires that belittle, deprive or infringe on others. The deadly sins are like a plague of addictions, harmful to all of us, obsessed or victimised by them.

Spiritual practise attempts to do away with a self-centred attitude that leads to doing unjustly by fellow creatures. Meanwhile, one must act as ethically as one can, despite impulses to behave without consideration for others.

A typical example of Davidsons gnostic outlook interprets "righteousness" as "spirituality." Trying to make this world better, he seems to think may be good karma but is no substitute for the quest for eternal bliss.

Tho, his love of animals is evident. A long chapter puts the case that the mystic path requires one to be a vegetarian. All the true masters would say so, he claims, citing many, and arguing they included Jesus. For instance, the fishes are not mentioned in earliest references to the miracle of the loaves.

Since I wrote this review a new paper-back edition has been published by Clear Books: www.clearpress.co.uk
And the author, John Davidson set up a website:
www.johndavidson.org

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Barbara Thiering: Christ in Qumran and Revelation.

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from the Book of Kells.**

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Jesus The Man.

Joshua or Jesus, the best known of the Christs or Anointed Ones, continues to inspire the devotion of much of the human race. Quiet scholars are no exception. In recent years, alone, traditional Christianity has been challenged by several "Copernican" revolutions in understanding or conception of its founder.

Ideas that were suppressed as heresies have returned like lost sheep. Whether they ever belonged to the Good Shepherd is another matter. It has not been settled properly whether the Turin shroud was his. The old rumor that Jesus survived the crucifixion has been revived, even if he wasn't. Eastern traditions of Jesus's travels and teaching have been researched by a Muslim professor, Fida Hassnain, believing "Jesus belongs to the world," and saddened by Christians desirous of suppressing such evidence.

New attention has been drawn to hidden meanings in the New Testament, most strikingly in the Book of Revelation, that could draw back the veil over Christ's mission in its first century. Such interpretations, using the Dead Sea Scrolls as a touch-stone for a New Testament sub-text, seem much too ambitious. But a scholarly consensus on some new insights, from this approach, may yet be achieved.

John Davidson, in *The Gospel of Jesus*, makes him a latter-day gnostic. Barbara Thiering might be likened to a modern pharisee. That is to say, she has a rigorous sense of ritual conservatism combined with popular sentiments. The latter show in her view of Jesus as a hero, who breaks down Judaic exclusiveness, by admitting married men, gentiles, women and the crippled, on equal terms, into the religion of the one god.

It is in these terms of Jesus the universalist, that Thiering finds symbolic meaning in the miracles. Her primary source of inspiration is not Nag Hammadi gnosticism but Dead Sea Scrolls ritualism. They show two steps of initiation into the community, usually assumed to be the Essenes and supposed residing at the Qumran site, near the caves where most scrolls were found in 1947.

This consensus has been vigorously challenged by Norman Golb, in *Who wrote the Dead Sea Scrolls?* What we are looking at, here, he says, is a miscellany more likely to have come from the evacuated Jerusalem library.

Barbara Thiering attacks the consensus from the opposite point of view. Qumran is not by-passed for Jerusalem, rather, Jerusalem is by-passed for Qumran. Gospel incidents there and elsewhere are "de-coded" as happening at Qumran.

For example, the raising of Lazarus is held to mean that an excommunication was lifted. Up to the middle ages, the church treated a man, decreed spiritually dead to their community, as physically dead. That is, he was put in a burial cave, complete with grave-clothes. And where better than near Qumran, which is full of secure caves?

As a hint for this location, Thiering examines the parable of the rich man and Lazarus (Luke 16: 19-31).

Two years after an initial baptism, wine, the drink of the community (from Qumran or where-ever) was taken only by celibates, entering a full monastic life. Thiering sees the "miracle," of turning water into wine, as Jesus allowing all to take communion, because all are equal in the sight of God.

This may not be so far-fetched, having considered how John the Baptist had by-passed the Temple priests. Jesus also did this, Thiering suggests, from a symbolic reading of his "miracle" of the loaves, as giving ordinary men the priestly tribe of Levi prerogative of distributing the communion bread.

"Walking on water" is deemed a jocular reference to the garment-laden priest using a pier to reach and bless a boats "catch," by the fishers of men, the Gentiles who were thus ritually "saved." Thiering says the "miracle" was that Jesus took over the exclusive role of the Levites, making the Jewish priesthood unnecessary.

Jesus was allegedly of the line of King David. The Jewish leading roles were the prophets, priests and kings. Thiering claims Jesus stepped out of his proper role to wear the holiest vestments of the high priest, privileged to enter the Holy of Holies. His garments "became dazzling white, such as no fuller on earth could whiten them." (Mark 9:2) The fuller whitened the high priest robes with frankincense.

In this passage of the gospels, there is also that authentic-sounding put-down remark against Jesus: The scriptures say prophets never come from Galilee. In other words, they didn't believe him.

The Christians were those who accepted Jesus as "the high priest of our confession." They were typically not of the holy land and not of the highest status in the monotheistic religion of the Jews, that Christ's supposed priestly usurpation asserted for them.

Jesus Of The Apocalypse

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Following from work such as *Jesus The Man*, Thiering, on *Jesus Of The Apocalypse*, proposes "The life of Jesus after the crucifixion."

Her basic method is the same. She works from ancient Jewish beliefs that history repeated itself. It was thought that if one could measure the cycles of time, one would be able to predict when previous situations re-occured. Such as, when was the right time for the Jews to successfully rebel from their current oppressors, in keeping with past insurrections.

From this, came an obsession with keeping time, which got translated into rigid ritual observances, typified in the Dead Sea Scrolls. There were similarities and differences between these and Christian writers.

Also, Thiering claims the Christian writers gave a new twist to this historicism. Instead of the past being a code for the future, the necessarily secret doings of the Christians were secretly codified as a sub-text to their writings. A precise religious calendar supposedly offered a precise context for interpretation.

Thiering, at her most plausible, is a shrewd commentary on the Clementine books, thought to be mere romances, popular at the time. She argues that they were Christian propaganda containing real history, with inconvenient details glossed over, of how a distinguished Roman family was converted to their religion. But this insight depended on her native wit, not on breaking a formal code.

She links this story to the authorship of Revelation. Everything is linked in Thiering scholarship, which led a web reviewer to compare her to a novelist of a Tolkein-like world.

Nevertheless, one can't help feeling her guesses are sometimes good. There is the famous number of the beast, in Revelation:

Here is wisdom. He who has understanding let him count the number of the beast, for it is a number of a man.

An abbreviated version of Thiering here pertains to the gnostic eastern monastic system. from which the zealots arose. Their head would be the man in question. They regarded the Christians as heretics disloyal to the nationalist cause. As in a modern school system, letters (in this case Hebrew) were used as numbers for grades. In this connection, Thiering explains how the 666 emerged, in counting the stages to the long years of oppressive study, with militaristic designs.

The Christians contemptuously rejected this as "the 666" -- the number of the beast.

[PS. In 2015, a tv program (which may have been *Secrets of the Bible*) showed how the numbers made up the name, Nero.]

The church father, Irenaeus associated the four gospels, of the evangelists, with the four living creatures of Ezekiel and Revelation. The association persisted in imagery and architecture. They drew Ezekiel chariot of God, leaving the Jerusalem temple, to comfort the exiles that they need no longer "sit down by the waters of Babylon and weep."

A new comfort was needed, the four living creatures were to be the four gospels, like the four divisions of The Old Testament, drawing God to the Christian exiles.

According to Thiering, the canonical gospels were not the four books that happened to be selected late on, but were an early plan to emulate the Old with a New Testament.

The four horsemen of the apocalypse were the priestly teachers of the gospels to the Diaspora. Their banners represented the color of the season they taught for: white for summer, red for autumn, black for winter, green for spring.

The latter priest was named Death because of his power of excommunication.

I won't repeat any more details.

Conclusion.

What are we to make of Thierings enormously creative, sometimes shrewd, if often credulous, out-pouring of hypotheses about that elusive character "the real" Jesus?

One of her colleagues perhaps sums up professional opinion about her: She's a nice lady but she's wrong.

It's easy to see why some of her claims are dismissed out of hand.

Not only is Jesus's crucifixion re-located to Qumran but he is supposed to have ritually re-enacted the event in later years.

Jesus, a chronic ritualist?

Jesus, having survived the crucifixion (and marrying), is not a thesis peculiar to Thiering. It is part of fringe scholarship. And if *Jesus Lived In India* frequenting the old spice road from China to Rome, this might fit with Thiering's claim, that the living Jesus, not a "vision," was asked, by Peter, "Quo Vadis?"

"Where are you going?" is a question that would be asked of a man, unless we are to assume "the vision" was a vulnerable "reincarnation" of Jesus the man. But then why call him a vision? The savior appears to have made a habit of these visionary appearances. Along with other writers, Thiering has a surviving Jesus meeting with Paul, tho this gets re-located into a rigid time-table of ritual observances, she believes prevailed.

That example is part of Thierings relentless removal of fairy tales, for the babes in Christ. Its replacement by a sort of sub-text conspiracy that reads like clock-work, once you've turned the key, is surely another sort of fairy tale. History is not well regulated.

Also the main characters in the canonical plot are allowed to take on the identities of minor characters. It coheres into a story of sorts, but there is little out-side evidence to keep the run-away imagination in check. So little is known about first century Christianity.

The scholarship of the lady is not in doubt. Even if every guess she makes is wrong, one can still get a new insight into ancient Jewish history. One has to admire her dedication, if not rely on her judgment.

Inevitably, Thiering replied to the rebuff she received: He's a nice man but he hasn't looked at the evidence.

But how to sift her results and to assess her approach, in different parts of the New Testament?

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Renaissance man.

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Dmitri Merezhkovsky: *The romance of Leonardo da Vinci.*

Michael White: *Leonardo, the first scientist.*

[Leonardo](#) and "the romantic agony."

Lost knowledge, scientific and moral progress, and universal education.

It may be bad practise to review together works of biographical fiction and non-fiction. But to be objective about a life is perhaps as much a fiction as to treat him subjectively in a novel. The biography of "the first scientist" can be compared to the dissection of corpses to understand the living body.

The study of anatomy was a da Vinci forte. White concentrates on this experimental work, in laying claim to his achievement as a scientist. For all his artistry and operational skill, unsurpassed till modern times, Leonardo didn't discover the circulation of the blood. He did make considerable advances in refuting wrong theories of light and sight.

Every specialist is allowed his enthusiasm. To claim Leonardo as the first scientist is understandable. Scientists claim Galileo as the first recognisably modern scientist. All White is doing is to push the

genesis of modern science back somewhat to investigator, Leonardo.

HG Wells, and more recently, Umberto Eco, in *The Name of the Rose*, go back further still, to Roger Bacon as the prophet of a distant future of technological marvels issuing from the scientific method.

If we are going to have exaggerated claims, they don't come any more heroic than that the history of Western science is a foot-note to the work of Archimedes. This remark was quoted in a BBC Horizon program on the re-discovery of a mathematical manuscript by him, actually a palimpsest. It will take long to decipher but already it has been discovered that Archimedes was much closer to modern methods of the calculus than previously realised.

Had his work been available in the renaissance, it would have been a real boost to mathematical science. Suggestions were made that man would be on Mars by now, and such like. Similar forecasts were made on finding, in an ancient Greek ship-wreck, a model planetarium, using differential gears, not re-discovered till the seventeenth century.

[P.S. I wrote this before the program, The 2000 year old computer, on research that attributed that planetarium to an origin in Syracuse, home of the Archimedes work-shop. "Science is a foot-note to Archimedes" no longer sounds such an extravagance,]

Archimedes is reputed to have used burning lenses as a weapon in defense of Syracuse. A book, by Robert Temple, called *The Crystal Sun*, knows of well over two hundred lenses from antiquity languishing in museums, unrecognised for what they were. More than likely, the telescope was a lost invention. The author characterised this, in Sherlock Holmes fashion, as the case of the disappearing telescope. The problem is that ancient records get

translated according to what the ancients were only supposed to know.

One such classical translator was only located in retirement in a nursing home. When he was put in the picture, he gladly re-translated a puzzling passage, without having to worry about what its author could not have known.

For all that, we cannot be sure that this lost science and technology would have meant greater progress for mankind. As HG Wells, a prophet of science, said: moral progress has not kept up with scientific progress. An even greater imbalance between the two might have plunged civilization back into another dark age. Indeed the abuse of technological power is raping the planet, which is heading for ecological collapse.

The Archimedes of his time, most Leonardo researches were also lost to mankind -- a considerable set-back to the revival of science. Eventually, about half of his volumes would be traced.

But grievous tho this waste was, the truth is that vast opportunities are being lost all the time, because most of mankind goes without education, basic facilities or teaching to any worth-while standard of competence. Much greater progress depends on much greater justice, in allowing all people to contribute their native talents.

In april 2002, the World Resources Unit reported that forty per cent of the worlds remaining intact forests could disappear in 10 to 20 years, at the current rate of destruction, due to mining, illegal logging and urban sprawl.

At the same time, Oxfam claim the European Union and other industrialised countries swindle poor countries out of \$100 billion per year, with unfair trade laws. Among their supporters was former British Labour government minister, Mo Mowlam.

In march 2002, Mexico, world leaders, including US president George W Bush, signed, at the UN conference on finance for development, to alleviate poverty and make education available to all. International aid groups were unhappy at the lack of deeds, as well as words.

The internet makes universal education a realistic goal. Whereas a sustainable ecology must become the priority to sustain civilization.

Western politicians have recognised the need to tackle world poverty as a defense against violent disaffection. At time of writing, President Bush wants a vast new missile defense shield. But rockets may be as costly and as obsolete, as battle-ships became, when naval powers were still building ever grander models.

Leonardo and "the romantic agony."

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Leonardo, like Archimedes, was much concerned with developing "secret weapons." They featured in his letters of introduction to ducal employers. He appears to have had scruples against revealing his plans for submarine warfare. Nevertheless, Dmitri Merezhkovsky novelised a tension between the gentle Leonardo and the monstrous armaments designer. One of his apprentices finds this Jekyll and Hyde clash too much to bear.

The vegetarian Leonardo buys caged birds from the market to release them. (This might be a self-defeating exercise.) He also wishes to release mankind into the air with flying machines. The carpenter of flying machine plans is also their "test pilot," characterised as another victim of apprenticeship to Leonardo. One of his models was recently built for display. It is too heavy to fly.

Michael White merely comments that he came no-where near to flight.

White doesn't discuss one respect in which Leonardo is rather too much like modern scientists, dependent on state or corporate funding for their research, namely as an ingenious servant of those in political power. Tho, he wanted to establish his independence to follow his own investigations.

Leonardo appeared to have that unattractive modern scientific outlook, that hides expedience behind detachment. Excuses can be found for him from his personal life. Being illegitimate, he did not have full parental recognition or rights. Any loyalty he might have had to Florence must have been quashed by the prosecution for sodomy.

He was acquitted but left the city. An Italian art critic suggested he had to leave in a hurry. It is just as likely that he shook the dust off his feet. Merezhkovsky dismisses the charge, refusing to hear any wrong of his hero. Michael White reckons Leonardo was homosexual. His evidence is by association and inference. Maybe he is right. But other characterisations are possible and just as likely to be false.

Of attractive youths among his companions, Leonardo himself was reputed to be of out-standing beauty. Merezhkovsky characterises these relations as fatherly. Perhaps he was giving parental affection, that his illegitimacy had denied him. Reaction to an inferior birthright explains his aristocratic pretensions and the dandys care for his appearance.

It is worth remembering that male may love female and pine for her company without sexual desire for her. Heterosexual love might be the natural concomitant of such an attachment but is still distinct

from it. One has to be careful about jumping to conclusions, however obvious they may seem.

Merezhkovsky strikes just the right ironic note in suggesting that a man of Leonardos universal interests must surely have included carnal knowledge in his strivings to encompass all experience.

Michael Angelo faced the charge against Leonardo, from someone he refused sketches to. Michael Angelo regarded the prior Bichiellini as the only saint he had met. He was without the bigotry and ambition of Savonarola. On Michael Angelo, who lived for his art, the prior commented that no man could have created such a work without purity of heart.

Michael Angelos companions and apprentices were found commissions and prospered. Whereas Leonardo himself died a virtual exile. No public effort was made to preserve and publish his voluminous notes. He was widely regarded as a heretic, his work neglected or plundered.

It would be amazing if Merezhkovskys avowed "romance" of Leonardo were an accurate indication of his personal life. To his credit, he creates a credible human being out of an incredible prodigy. It is hard to over-state Leonardos profusion of talents. This review doesn't attempt to give an impression of their variety. But Merezhkovskys super-man is rendered weak and vulnerable by the very isolating effect of his genius from the rest of mankind.

"Renaissance man," that later ages have so much admired in Leonardo, simply took on so much that he brought relatively little to completion. Merezhkovsky makes this gap between ability and fulfilment, the cause of Leonardos self-reproach. Here is "the romantic agony" on a heroic scale. The author, who is a poet, depicts Leonardo like a force of nature unbent by Italys mountain

storms and somewhat as futile in human affairs.

The Merezhkovsky romance teems with exotic manifestations not only from Leonardo.

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William Lovett: Chartism.

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In 1876, one hundred years after the American Declaration of Independence, the author, of a declaration of independence of his class, published his life story.

The working class organiser, William Lovett wrote the famous "six points" of the Peoples Charter, "for the equal representation of the people":

Universal Suffrage; Equal Representation; Annual Parliaments; No Property Qualification; Vote by Ballot, and Payment of Members.
(Lovett owns these ideas were not original to himself.)

It used to be the custom to say that all these points but annual parliaments were achieved, long after Chartism disappeared. The US House of Representatives has biennial parliaments. That early radicalism has not been realised generally, tho.

Later, some realised that equal representation required voting to be counted proportionally. In mostly corrupt electoral reforms, the parties took for themselves monopolies of the proportional count. The result has been that all people are equal but parties are more equal than others.

Parties have favored list systems that treat votes as their own personal property to allocate as they please to the candidates on their lists. This lack of democratic principle has brought about any number of arbitrary electoral fixes, pretending to be "PR" or "some form of proportional representation."

In other words, voting systems that use party lists are akin to the old property qualification laws, in all their irrational holds over others. William Lovett criticised the anomalies of Household Suffrage for

the thousand legal quibbles of house, tenement, land, rating, and taxing which have rendered the Reform Bill a nullity; and which have wasted a countless amount of time and money in the vain attempt to unravel their legal and technical mysteries. And that they might be assured that the adoption of a Household Suffrage would not settle the great question of representative right; for the excluded classes would keep up and prolong the agitation, and be more and more clamorous as the injustice towards them would be more apparent.

Much the same can be said for so-called proportional representation that only extends a Partisan Suffrage of the proportional count to the exclusion of every other possible preferred personal characteristic that candidates possess, by age, sex, race, creed, work, class, language, personality type or whatever.

Like household suffrage, voting systems of the world have become a chaos of legal quibbles and technical mysteries. This is especially true of list votes, which are so much fodder for the parties to share out the seats between themselves. Party lists usurp the guiding principle of the voters right to elect candidates (that is supplied by the transferable voting system, in a proportional count).

William Lovett included Female Suffrage in his draft of a Bill. He later regreted that other Chartists talked him out of it, as too unrealistic an aim.

Of the Working Mens Association, which he founded in 1836, he says:

And as our object is universal, so (consistent with justice) ought to be our means to compass it; and we know not of any means more efficient, than to enlist the sympathies and quicken the intellects of our wives and children to a knowledge of their rights and duties; for, as in the absence of knowledge, they are the most formidable obstacles to a man's patriotic exertions, so when imbued with it will they prove his greatest auxiliaries. Read, therefore, talk, and politically and morally instruct your wives and children; let them, as far as possible, share in your pleasures, as they must in your cares;

The modern American movement of Kids Voting shows that educating children in political issues and making voting a family affair increases turn-out.

In 1837, Lovett prepared "what we believe to be a loyal and outspoken address" to the newly enthroned Queen Victoria. She was warned of the false counsel of Whig and Tory. With their exclusive interests, they would divide her from her people.

This was like an anticipation of Disraeli for Tory Democracy and Radicalism but with the working class taking the initiative to ally with the chief aristocrat. Victoria, like Wellington, however, was no believer in universal suffrage.

Six years after the 1832 Reform Bill, Lovett election address said:

But it has been urged, as a plea to keep up exclusive legislation, that the people are *too ignorant* to be trusted with the elective franchise. Are Englishmen less enlightened than Americans? - and has the exercise of their political liberty proved them not to have deserved it? - Nay, in our country, are the unrepresented *as a body* more ignorant than the present possessors of the franchise? - Can they possibly return more enemies to liberty, more self-interested legislators than are returned by the present

constituency to Parliament? The ignorance of which they complain is the offspring of exclusive legislation, for the exclusive few from time immemorial have ever been intent in blocking up every avenue to knowledge. POLITICAL RIGHTS necessarily stimulate men to enquiry - give self-respect - lead them to know their duties as citizens - and, under a wise government, would be made the best corrective of vicious and intemperate habits.

This passage is still relevant. Public apathy is the logical outcome of politics being made an exclusive profession by politicians seeking a career out of it. Most governments have denied the voters an effective choice of representatives and individual policies. Instead, voters are patronised by the take-it-or-leave-it manifestos of the parties. No surprise, if so many people decide to leave it.

In 1840, Lovett founded the National Association for science and technics education, artistic recreations, libraries, cultural society with the aim:

to rescue our brethren from *the thralldom of their own vices*, and from *servilely imitating the corruptions and vices of those above them*.

Thorstein Veblen showed the profound truth of this observation, in *The Theory of the Leisure Class*.

Lovett addresses tend to be burdened with the grace notes of heroic rhetoric. But they have perception and clarity, and, if repetitious, are at least forceful. In other words, they are Tom Paine style, earnest with a desperate hope.

The lack of much sense of humor may be excused by the condition of the eighteenth and nineteenth century English working class.

Lovett himself was lucky to find work at last among furniture-makers. For a while, this aristocracy of labor resented his presence in their closed shop.

English furniture was accurately joinered but lacked style. French furniture was superbly artistic but you could practically throw the drawers in. So, Lovett tells us, with a rare departure from seriousness.

Lovett, like Paine, abhorred physical force to gain ones ends. The catastrophes of violent revolution have proved them right. Lovett was a "moral force" Chartist simply because force is amoral or without principle:

We are of the opinion that whatever is gained in England by force, by force must be sustained; but whatever springs from knowledge and justice will sustain itself.

In 1844, as secretary to the Democratic Friends of All Nations, he claimed:

Let but the same daring mind and resources which have so often warred with tyranny, and so often been worsted in the conflict, be once *morally applied and directed*, and citadels, armies, and dungeons will soon lose their power for evil.

This was to prove true of the downfall of East European Communist one-party states. (Tho, it seems the evils, of ethnic strife, also have been liberated. And corruption thrives on being privatised.) Absolutism dreads "one word of truth." And pioneer English reformers battled against the tax on knowledge, thru a stamp-dutied press; against social class education; and against secret diplomacy war conspiracies.

The reformers had their romantic hot-heads for revolutionary secrecy. Lovett recalled of the 1831 National Union of the Working Classes and Others:

we had no trifling number of such characters; and night after night was frequently devoted to prevent them, if possible, from running their own unreflecting heads into danger, and others along with them.

This mentality is well exemplified in *A Radical Song*, which reflects a blood-thirsty demoralisation after the Napoleonic wars. Its "freedom" is of the free-booter, the bully and the yob. Speaking of the Devil, one line (one can well believe in the light of history) reads:

And should he prepare us in hell a warm berth,
We'll forestall him by making a hell upon earth.

Lovett believed in the moral force of being bold and honest in a just cause, as would enlist public sympathy, rather than be secretive and excite suspicion and persecution.

In 1845, Lovett's National Association address reasoned against anti-democratic conduct, as a means to a professed democratic end, by the physical-force Chartists.

In his 1838 Irish address, he complained

that the principles we advocate have been retarded, injured, or betrayed *by leadership*, more than by the open hostility of opponents.

Lovett 1836 Belgian address was the first international working men's address. Many followed, both to Europe and North America. One such speech to the French made five points, which deserve as much

historic recognition as "the six points" of the Peoples Charter. The five points are a prototype of the United Nations Charter:

- 1) a protest against all war as against morality, religion and human happiness;
- 2) a *Conference of Nations*, with representatives chosen by the peoples to settle national disputes by arbitration;
- 3) war expenses to go to education and the improvement of the people;
- 4) "to set *an example to other nations* of that justice, forbearance, morality and religion they preach to their own people."
- 5) to set bounds of justice to territorial acquisition.

Another fertile idea, from Lovett, was a General Association of Progress to unite reformers in their diverse aims, rather than leave them divided and weak.

From 1849, Lovett turned most of his attention to education. For example, he didn't think spelling should be taught as an *irksome and disagreeable task* but *as a game and amusement*. He knew that to learn work that is useful it had best be enjoyable for its own sake.

RH Tawney introduced *The Life and Struggles of William Lovett* with a diligent summary.

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Jill Liddington: Rebel Girls.

Their fight for the vote.

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Yorkshire-woman, Charlotte Bronte: pioneer romancer of freedom for women.

Yorkshire rebel girls.

This is a history of largely new evidence of Yorkshire women campaigning for womanhood suffrage. Those from other parts of the country, such as London or Lancashire, are featured mainly when they appear to speak in Yorkshire. And the deputations and demonstrations before the Westminster parliament are told much from the point of view of the Northern contingents.

The book cover has a clog and shawl girl of sixteen, possibly photoed just as she is shouting "Votes" while escorted away by police. Her name and some family history is uncovered. There is the self-educated Lavena Saltonstall in polemical local newspaper letters. Florence Lockwood had a lonely aspiration to become an artist. She eventually finds companionship and emancipation from restricted social and political values. Many others are trailed by the detective historian. To her regret, some are no more than glimpsed.

The author has already written a book dealing with the regional contribution from Lancashire. Yorkshire was more disparate than the well-organised work-forces of its neighboring county. Liddington has had to wait a good many years before remaining pieces of evidence have come together well enough for this new book (2006). The importance of this work is as a historical corrective to any notion that women got the vote mainly thru the agitation of some middle class southerners led by the militant Pankhursts.

In over-centralised Britain, this is welcome historical news.

However, the militant influence is felt in reading this book of the north women campaigners. That shouldn't disguise the fact that in the years up to 1914, the rebels are looking increasingly desperate. Their local organisations spring up but soon wither. A faction breaks away from the Pankhurst autocracy. A few organisers are struggling to keep going. And their adherents are tipping to sensational acts to attract attention. As the violent protest escalates, Liddington points

out that the movement was lucky not to harm someone. In general, I agree with her assessment of the limitations of militancy.

Peaceful protest can stir publicity that draws peoples attention to an injustice. Women lobbyists tried to speak up but were pulled down and carried, even kicking and screaming, out of Westminster.

The peaceful leader Mrs Fawcett generously said that they had done more than their traditional organisation in a dozen years to promote the Cause.

We should be clear who the real militants were, in the first place. The government tried to repress the women, just exercising the right to protest. Disgracefully rough handling of women protesters was a bad example in civil behavior. The forced feeding was more extremist than ever the women worked themselves up to, before the Great War intervened with a real example in violence.

Lazy-minded government couldn't be bothered to work out the next step to where its actions were taking it. They tried to break the spirit of women as independent intelligences, before it dawned they were going to have to give them equal rights. The government got to nearly killing suffragette prisoners, before it dawned that government militancy would have to give way to civilised treatment.

Leonora Cohen smashed a glass case in the Tower of London and then, with her husbands advice, got herself acquitted by a jury, because the prosecution over-estimated the cost of the damage. Her avowed motive was the treachery of the Asquith government, pretending sympathy to female suffrage but leaving it out of the Reform Bill.

The government might have got the message from the jury about the mood of the country.

Up till then, Cohen could still claim some sort of moral high ground against the government. She had not victimised businesses, at least in this instance of glass breaking. But then she incited arson against empty property. (An empty property, they broke into, turned out not to be empty.) In taking the law into their own hands (empty property must be burnt), these arsonist suffragettes were being as arrogant and inconsiderate as the government.

One notices sometimes that governments fail to rise - if they ever do - to the moral level of reformers, before some of the idealists have dragged themselves down to the level of the reactionaries. It is as if they have to exchange roles before they can come to terms with each other, like those role-playing therapy groups to get off the emotional hang-ups from being trapped in a dysfunctional family.

Of course, there were plenty of women campaigners, who gave the "extreme wing" no more than their due. In the meantime, the earlier constitutional organisation led by Mrs Fawcett quietly built up impressively, to use their own image, from an acorn into a mighty oak with many branches, and scores of thousands of affiliate Friends. When they marched to London, they didn't have to try to force their way into the seat of power, the powers agreed to see their deputations.

In *Rebel Girls*, the less well-connected move center-stage. Mary Gawthorpe, a self-educated working girl from the textile towns and villages of the West Riding, became one of the wittiest speakers on the campaign circuit.

An example of Churchills wit was anticipated by her. That is when Nancy Astor said if she were married to Winston she would put poison in his drink.

Churchill answered: Nancy, if I were married to you, I would take it!

This Churchillian riposte was even featured on the cover of a recent collection of political wit.

In the Edwardian era, a male heckler, of Mary Gawthorpe, made Nancys threat.

Mary anticipated Churchill: No need for that, friend. If I were married to you, I would take it.

The heckler, who had been doing his best to put her off, was made a laughing stock and left soon after.

The courage and good will of this little woman (she was less than five foot tall) didn't spare her the mob violence that was often meted out to the suffragettes. She was kicked in the stomach and had to have an operation. The book doesn't say whether this was why she had no children.

Mary worked with the youngest Pankhurst daughter, Adela, who was sent north to do the organising there, out of the southern spot-light. She, too, is somewhat side-lined from the standard 1931 history by Sylvia Pankhurst, *The Suffragette Movement*.

The emigrant Mary Gawthorpe helped promote the American edition but found Sylvia had only given her a foot-note. (One wonders if that was only an after-thought for the help she was getting.)

The personal lives of the rebel girls are the most sympathetic aspect of the volume. I mean something a bit more human than "social history." "The masses" are what most of us are, let's be frank, and their story is largely our story. Their aspirations and endeavors are heart-warming. And a book, such as this, is the best we can do to reach out to them.

The two main causes of John Stuart Mill.

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Before the quibbles, I would like to make an important point about "the vote" which women fought for. So far, in Britain there are half a dozen undemocratic voting methods where one democratic method would do.

John Stuart Mill entered Parliament to promote two causes: votes for women and proportional representation alias personal representation, that is where the vote is personally transferable by the voters (the single transferable vote) and not merely by party bosses presenting party lists we have to vote for as party blocs, like the vote for British Euro-elections, or for additional members to the Scots, Welsh and London parliaments or assemblies.

Tony Blairs Labour party got large numbers of women MPs by forcing them on local constituencies. (Ebbw Vale, being one of Labours safest seats, meant that Labour voters could rebel and elect a former Labour man as an Independent against a mandatory woman. But that option is not generally available without a daring rebel to vote for, and without splitting votes and letting in the least wanted candidate.)

David Cameron, "Blairs heir" has so far (in 2006) got to asking Tory local constituencies to have two women out of four final nominees. The monopolistic single member constituency means that the voters are then presented with an accomplished fact. Tory MP Ann Widdicombe opposed women candidates having their paths smoothed for them, making them into second-class MPs.

At the Power Inquiry conference in 2006, single members was the one feature Cameron was adamant against changing. This public relations man, one might truly call "Safe seats Dave" or "Rotten Boro Cameron," will take any camera call to make the world a better place

but will not start by transforming his own party from another mean-spirited little oligarchy.

The transferable vote in multi-member constituencies allows voters to order a personal choice among several candidates, whatever their party or gender or ethnic origin or any other personal quality and character. This gives a genuinely democratic proportional representation.

We have votes for women. We don't have PR, by STV, the democratic voting method.

Minor points.

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Finally, some quibbles, which are not meant to detract from the value of *Rebel Girls*, but will pad this review.

Actually, this would not be a minor point as far as the honor of Winston Churchill and his family was concerned. The author comes up with the legend that Churchill as Home Secretary ordered the soldiers to fire on the Tonypandy miners. When Richard Burton was given a part as Churchill, he came up with this folk lore. It was dismissed by the entertainment magazine doing the write-up. I also vaguely remember some book introduction, going off-topic to refute this allegation.

I'm not going to go into this defamation further. Liddington should have done that herself. Every blunder in Churchills long life has been raked over, and if one so serious were true, it would be widely known and recognised. It is common sense that the charge is wrong. When

you consider all the enemies that Churchill made, from every party in his own country, not to mention those in other countries, and the debunkers after his death, it is inconceivable that they would not have made this supposed shooting order stick, if they could. Anyway, anyone is free to investigate the evidence for themselves. I don't want to glorify the man but neither is this the place to go into his short-comings.

The author says the Hull womens suffrage organiser, Dr Mary Murdoch "was very probably a lesbian." Maybe so, but the surmise, is based on no actual evidence. And it is presumptive so to label her, since it reflects on every woman, who may be only married to her calling, yet lives happily with another woman.

In its apparent belief that the essence of happiness with another is sexual congress, it may say more about the author than about Dr Murdoch.

The author, out of political correctness, seems to be throwing a bone to the lesbian lobby.

Political correctness seems to be a symptom of the party patronage of lobbies, rather than the proportional representation of the public interest, in the House of Commons or Communities, as well as a proportional representation of special interests in a second chamber.

Getting now to the trivia, Adela Pankhurst spelling "humor" and "honor" is changed to "humour" and "honour". This copy-book correcting may be misplaced. The shorter spelling was coming into scholarly English use in Victorian times. Then Teddy Roosevelt included it in his American spelling reforms. This effected a back-lash that made it a point of honor for the British to use the longer spelling.

One of the beauties of the internet, which spans different countries with recognised English spelling variations, is that one can pick and

choose ones spelling, without the book publishers going in terror of committing a spelling heresy.

Yet Liddington uses the American solecisms or redundancies "report back" and "co-conspiracy" as well as the English varsity solecism "come up from" etc.

17 september 2006.

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The franchise plummets to 11+.

Leslie Brewer: *Vote for Richard.*

(Serialised in The News Chronicle; first published in 1948 by Art and Educational Publishers Ltd. London and Glasgow.)

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Joshua Reynolds: Angels.

"And did women get their own way in the end? Did you and your friends succeed in making people treat you properly?"

'Yes; after a long struggle.'

What a wonderful idea! If women were able to do things like that, then boys and girls could, quite easily, if only Richard could make them realise it. They had only to be complete nuisances for a month or so and, like women, who were once treated 'as children.' they would get votes and become Members of Parliament, and very soon put things to rights. Where women had succeeded, clearly boys and girls could. There must be hundreds of boys and girls up and down the country just longing for a chance to do something like this. They had been fools not to think of it before.

There's many a true word spoken in jest. But an idea has to be laughed at, first, before it can be taken seriously. Logic leads the way: If not suffragettes, why not... "suffraginos" shall we say? A millenial wish, perhaps. But before the end of the second millenium, some young English people did ask for a childrens parliament. And there is a youth parliament.

[PS. What's more, the vote for sixteen year-olds has become a reality in Scotland, since the 2014 Independence referendum.]

The childrens story, by Leslie Brewer, *Vote for Richard* is a light-hearted fantasy on the first child to stand for parliament. In the end, Richard succeeds, surprisingly, in getting the franchise extended to everyone over ten. But the author aims more at readers of ten or below.

A British child failing the "eleven plus" exam could mark him or her for life. So, Brewer giving the vote for all of eleven years or more, is

no more than just. Considering that a child's whole future may be determined by their performance in exams, it could be said that children are carrying their adult selves on their backs. As parents are responsible for children, children are responsible for their adult selves.

Since children have such a big personal responsibility in competitive examinations ("the rat race") it cannot be said they are not responsible enough to vote.

It's also noticeable that children are among the most aware of the ecological dangers to the future of the planet, above all, *their* future.

Still, today's commercialised kiddies might find Brewer childish. In the post-war austerity, a child demands extra cheese rations for pet mice.

It hardly compares with toddlers answering pagers. One did this in our local library, the other day. Mobile phones are banned. But he was so small he couldn't be seen passing below the librarians counter.

As a matter of fact, the big business of children's adverts on television etc, that has grown up since the second world war, is a fresh reason for today's children, affluent or deprived, finding a public voice of their own, independent of commercial brain-washing. The argument, once used against women's rights, that children need protecting from the hurly-burly of politics sounds weak, in the midst of the relentless parade of dazzling toys to fill their Christmas stockings and empty their pockets.

In some ways, most adults have as little control, as children, over the economy. Adults have no forum to represent the interests of their working lives. The British House of Lords is to house "the people's peers," meaning *the appointers peers*. An "independent Appointments" commission is a contradiction in terms, another

shining example of feudal British hypocrisy. It is a common-place example of politicians giving democracy a bad name, by pretending an oligarchy is a democracy.

"Sophisticated" moderns are clueless about economic democracy. And Brewers childish jeu d'esprit may not be so silly, either.

The newspapers were full (Richard read them carefully) of talk about things which vitally concerned boys and girls. Should the Cane be Abolished in Schools? Should School Holidays be Shortened? Are Examinations Fair? Yet the strange thing was this: All sorts of people gave their opinions on these matters, but boys and girls, who were going to be caned, or examined, or have their holidays shortened, were never consulted... About a quarter of the whole population of Britain was ignored. That, both Richard and Sally agreed, must be quickly remedied.

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RG Collingwood *Autobiography* bitterly recalls his mania for excelling in exams, to prove himself. Afterwards, he realised the vanity of such work and condemned his prize achievements as worthless. He believed children were "criminally overtaught."

In China, from where the British imported the system of examination in the classics, the government itself was obliged to condemn this educational forced feeding, after a singularly tragic effect of parental pressure to achieve top marks.

In march 2000, Premier Zhu Rongji told teachers to stop piling homework on children. Stop cramming them with intellectual facts. Consider their all-round education. Strengthen their moral education and help them develop practical abilities and a spirit of innovation.

In *Vote for Richard*, a new party is formed, with its own salute of thumbing ones nose. He and Sally have just approached a paper to spread the news of this Childrens Party:

"I hope the Editor wasn't joking," said Sally. "He may have thought we were dangerous lunatics and was only humouring us to get us out of his office."

In this dated childrens story, there is some timeless advice for reformers of whatever age or country:

"I know," said the Editor, "that some of you want to begin a reign of terror, here and now, to make people give you the vote. That's not -- if I may say so -- the British way to set about it. Try peaceful means first. Ask nicely. If the petition fails and Parliament does nothing to meet your demands -- well, that will be the time to consider other, tougher ways and means. But put the petition first, please...Meanwhile, you have to show that you are worthy of being given the vote...I know it is not going to be easy but..."

There follows "the week of virtue." But the Chartist-type petition is rebuffed. The children go "off the good as gold standard." They also have the backing of a manufacturer of water pistols.

The children show that they, too, can go on strike. In the post-war period, there is still considerable juvenile employment, in offices and hotels, as well as news boys.

But we are still twenty years away from the 1968 international revolt of students. (The lowering of the franchise age, to eighteen, would soon re-define students as young adults.) In 1948, school sit-ins would have been akin to a treasonous breach of quasi-military discipline.

Anyway, the Prime Minister has second thoughts. Brewer makes a delightful under-statement of it:

The news that boys and girls had secured the vote was received with mixed feelings in the country. Most people agreed, however, that the Prime Minister probably knew what he was doing, though it was, as *The Times* newspaper said, all a bit sudden.

(This competence view of prime ministers was in the days of Attlee and Churchill.)

When women got the vote, only one woman was elected an MP. The story again follows precedent. There's only enough money to afford a campaign in one constituency (with "seven boarding schools and three orphanages").

But Richard, the parliamentary candidate finds himself up against dirty tricks.

Like Robert Redford film, *The Candidate*, he gets in at last. Unlike the Redford character, packaged for popularity, he won't have to ask: Now what do I do?

Like F Anstey, writing *Vice Versa*, Leslie Brewer *Vote for Richard* could make a great movie. A completely modern script would be needed, but Brewer, like Anstey, has shown the potential of his plot.

In the real world, extending the franchise to sixteen year olds is gradually moving onto parties agendas. Moreover, parties most popular with the mid-teens have the incentive to act, when they get the chance.

In ancient Rome, you were a man at fourteen.

H G Wells argued that people, just left school, remembered more of their education to exercise a vote. Compared as good citizens, the young lived in hope, unlike those broken in spirit by the age of forty.

The franchise may become part of teaching the young responsibilities, with their rights against assault or abuse. The need for the young to settle their disputes by informal child courts of law, rather than violence and exploitation of each other, suggests a highest child court of the land, being a childrens parliament.

The Kids Voting movement, in the USA, has shown that political participation takes education, like anything else important enough to have to be done. Parental help of their children, to learn about policies, also increases adult turn-out at the polls.

School-boys invented proportional representation?

And finally (written in 2015), let's not forget that school-boys have a good claim to inventing the future of democracy.

In 1821, Thomas Wright Hill, son of Rowland Hill, observed, at how children elected a committee, at his fathers school. The favorite pupils became the candidates that children formed queues behind. the most popular candidates, with the longest lines of support, would lose some support to next preferred candidates, till their queue was no longer than needed to take a seat.

The first winning candidates surplus voters would transfer their allegiance to their next favorites, till they, too, had just the right length of queue to take another seat.

The least popular candidates, who never reached this winning length of queue, would become a hopeless cause, and also lose their supporters to next preferred candidates.

If there were five seats, then all the pupils eventually would form into five equal queues, electing the five favorite candidates.

In the formal count, these equal queues are called quotas, being the elective proportion of the whole vote, necessary to elect a candidate, to ensure the voters equal representation.

This is the original and genuine form of "Proportional Representation (PR): As voters transfer their loyalties, from most preferred candidates with surplus votes and least preferred candidates, in deficit of a quota, this system is called the Single Transferable Vote (STV). It is the future of democracy, if democracy, and humanity, has a future.

This review appeared in 2001.

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HG Wells: pre-internet idea of a World Brain.

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A dismissive critic of World Brain.

From the web, I was reading an academic survey of Wells proposal of a digest or abstract of mankind's increasing knowledge. He wrote several works about this including *World Brain* (1938), *The Idea of a World Encyclopedia* (1936), *Science and the World Mind* (1942).

I'd never seen any of these works so I was relying on the article to learn something about them. The author was concerned to warn against what he believed to be the dangers of "social repression" in Wells conception.

Wells regarded himself, in the subtitle to his *Experiment in Autobiography*, a very ordinary brain, which approaches Winnie the Pooh (a bear of very little brain) in modesty

Never the less, the world brain has been justified by events. The sciences had to resort to journals which are abstracts of the increasingly unmanageable output of their professions.

As far back as his utopian science fiction, *Men Like Gods*, he envisaged publication available to all. Until the world wide web, this was just a dream. Yet, it seems unlikely that the internet will be enough to help education win the race against catastrophe. (One of Wells most famous pronouncements is that "Civilisation is a race between education and catastrophe.")

Let's give credit where it's due. Amongst many other things, Wells foresaw that information would have to be assimilated on a world scale to promote the most efficient growth of knowledge and harmoniously foster human talent and progress. He drew attention to the need and pioneered its supply with his own encyclopedias to educate the world.

Rayward cuttingly regarded these as medieval, for some unknown but derogatory reason. Their obvious influence is the eighteenth century encyclopedists.

In accord with the Enlightenment spirit of progress, Wells promoted "the democracy of science" with a charter of scientific fellowship. This was shortly after the 1940 Sankey Declaration of Human Rights, which he also inspired. Not to admit the consistency of Wells

commitment to free speech, free debate and publication is simply to misrepresent him.

The critic (W Boyd Rayward) excuses himself for citing Wells works out of context, with a "pastiche" of quotations. He notes Wells reservations about the relevance of universities to human problems, and repays the compliment.

The fact is, by selective quotations, you can prove practically anything about anybody. You could argue convincingly that Beethoven was a symphonic non-entity with reference to the once popular Battle Symphony, mentioning that he also wrote nine other symphonies.

Scholars have shown to their satisfaction that Jesus was a political insurrectionist. Or equally, academics have shown him to be a barefoot philosopher with an academic indifference to the world. A latter-day pharisee, Barbara Thiering, sees him as a pharisee, and the gnostic John Davidson sees him as a gnostic. You could say he has been shown to be all things to all men who have held up mirrors to him. People have done this about Jesus and he never wrote anything, or nothing he wrote has survived, so far as we know. Imagine how easy it is to condemn a man by his own words, if he wrote over a hundred books during more than fifty years of turmoil.

There is nothing wrong in devils advocacy. Wells was no saint, to be sure. But it would be more honest to admit the prosecution role. Mr Rayward quoting reminds of a compedium of worst verse from the great poets. These shadowings of the great poets are merely amusing flops because everyone knows where the balance of the truth is.

If the shadow of HG Wells looms large, that is in keeping with his times. Tho he was not as consistent and influential as John Stuart

Mill in the nineteenth century, it is little known that Wells better non-fiction writings offer the first half of the twentieth century about the nearest thing to a (low-profile) democrat of distinction, when democracy seemed an unfashionable failure.

(My e-book, *Scientific Method of Elections*, gives bibliography and commentary mainly on his writings for proportional representation. It also includes the above-mentioned charters.)

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The real significance of an unbalanced portrayal is what it says about the portrayer rather than his subject - a failure of the portrayer to rise to his subject. He concludes that the idea of a "world brain" "may be interpreted as becoming an expression of totalitarian values and authoritarian control." So it may.

But this is a fact: HG Wells is one of the liberators of the human mind. Wells worked as much as anyone, as essentially stated in the preamble to the 1940 Declaration of Human Rights, to re-assert the rights of the individual against every extension of political and economic control.

When all his faults and short-comings have been admitted, it must be said that Wells did try to improve democracy, in practical terms. Established wisdom seems mainly to serve established things. That is why one has to go back to Wells.

Wells admired Plato for *The Republic* and sometimes called his utopia "The New Republic." The critic referred to *A Modern Utopia* (1905) for Wells four categories of human beings (kinetic, poietic,

dull, base). This is one of the dullest works Wells ever wrote, and Wells was rarely "dull." Occasionally he was "base." (Aren't we all?)

The Early HG Wells was "poietic" (or "mythopoietic" - myth-making - as critic Bernard Bergonzli said in his study of his late Victorian science fiction). His later works were "kinetic" - he certainly "moved" a new declaration of rights, that influenced the UN Charter.

Wells early SF could also be called the work of a maker or poet in the familiar sense. This is testified by T S Eliot, who called "unforgettable" the sunrise on *First Men In The Moon*.

Wells follows Plato in categorising human types. He admired Plato for making him realise that society could be changed after one's own heart. To the end of his life, he found a place in his thinking for this Platonic way of dividing people up into crude classes, which is arguably the wrong way. And also most un-Wellsian in its philosophy. Wells was a nominalist and not a Platonic realist. He didn't believe in the reality of concepts, but regarded them only as more or less useful labels or names. Normally, we would expect Wells to say that a classification of human beings into four types did no justice to human diversity.

Then again, as the limitations of old age descend, I suspect that party government and the Establishment are rather well characterised as the dull and the base.

Our academic critic may not have been aware that this categorical limitation in Wells' thinking was not characteristic. But it is odd that another work he chooses to cite is a work of fiction, *The Shape Of Things To Come*. Again, this is not one of Wells' many works for which I have a high regard. The early pages are just one of many examples, in his fiction and non-fiction alike, in which Wells displays his gift for social history.

That future "history," was bound to be over-taken by events. It is peculiarly unsatisfying to read, maybe because the style is journalistic, giving an impression of being an epic of misreported events. It was more successful when cut down and re-cast imaginatively, as the film story, *Things To Come*.

The Shape Of Things To Come is just one of many fictions, in which a new elite takes over the running of the world. Who can deny that the world is still run by elites?

2005; revised and posted May 2006.

Postscript (October 2015):

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Ten years after countering a disparaging review of *World Brain*, I managed to read it for myself. Wells conveys that the schools and universities are falling down on the job of properly informing public debate. He admits that his own attempts were inadequate and that he was being provocative.

In 1937, the provocation succeeded only in receiving a mass denial from the teachers. This is the pack defense of the professions, as described by Margaret Heffernan, in *Wilful Blindness*.

However, I can personally vouch for the truth of Wells criticism of history taught in primary schools, as “1066 and all that.” I can still remember Anglo-French relations summed up as: first they won and then we won.

And that was twenty years after his objection to narrow nationalist egotism impressed on young minds, when still at a barbaric phase of development.

Wells outlined a curriculum of essential content for people like my parents, who never had a secondary education. They were warned, with a sort of horror, that my five year old self still remembers in old age, from my mothers former teacher, against sending me to the local state school. Like a Soviet election, this was the sole choice on offer from the local authority.

Anxious to spare me their own skimmed and brutalised experiences, my parents sent me to a private religious primary school, they could ill afford. At first-year level, the experienced old teacher allowed me to write in my own immature large hand, saving me from being mistaught into illiteracy. Apart from that boon, I think the average level of teaching was poor, tho I can forgive the carefree laxness, while it lasted, before the stupid obsession with an examination system that usurped the education system.

If primary education did not leave me nearly as well-informed as it might, this was more than made-up-for by the moral education from the religious head, who acted like a judge, imposing absolute equality before the law, on our childish misdeeds.

My secondary education in history was a very different matter. It started off in Wellsian fashion with the ancient Middle Eastern civilisations. The next I remember was an un-Wellsian European feudalism of castles and peasants, a recognisable forerunner of the English class system.

By ordinary level exam time, we were moving into the recognisably modern world of “revolution, reaction, and reform,” including a very frank impression of Englands all-out legalised oppression of Ireland. (Gasp!)

For what would now be called sixth form college, our history teachers pleaded with the education board to teach modern British and European history, right up to 1939. My year was the first to benefit from this, in about 1966; definitely not 1066! Tho, authority decided to leave the girls in the dark ages.

We did not need to go into the Second World War, as we were already saturated with films and documentaries of it. I knew less about the political history of my post-war childhood years, as I found

out at college, from reading British Political Parties, by Robert McKenzie.

From first to last, the quality of teaching was very variable. The salvation of bad teachers, poor or inadequate teachers, was that the child had to take who they were given. This may have been all right for them but it was, in my youthful experience, the biggest drawback to a good education.

And it was not just a question of sub-standard teachers. A teacher may be good for some children but unsuitable for others. That is the extra important reason why children should be allowed to choose teachers of essential subjects. Teachers have their own temperaments, tempos and mind-sets. Pupils need to be able to select the ones that they can best get along with. There is no substitute for the child's subjective choice of teacher. No one else can know for them what is the best way for them to learn.

I would qualify this observation of an over-taught childhood and youth. Where a limited choice was offered, teachers got to canvass for their particular subjects and noticeably developed the skills associated with politicians. Whereas the child was still innocent of promotion politics, in which public interest disguises self-interest.

The great medieval English scholar, CS Lewis was notoriously good at fighting his corner against competition from new courses in modern English literature. Of course, Lewis had the popular touch. I once read, or stumbled thru, his erudite volume in the Oxford history of English literature series, not for any particular interest in late medieval poetry (beyond the fact that I myself was a poet) but just because I knew his writing was good company, during one long winter, with one's feet before the fire.

Like JB Priestley, I don't really approve of professional qualifications in, what I would consider, leisure occupations, like modern literature, the movies or media studies. That's not what made Dickens or Wells great, and I don't think we've had their like since.

Some writers, like Kingsley Amis, have suspected that the academising of literature has coincided with its falling off. Leisure should be a release from, not a substitute for reality.

Equally, I don't think science and technology courses should be crammed like a sort of mental coal-mining, or not all of them. We should be doing our best to attract as many people as possible into the practice of a thoughtful and inventive frame of mind, instead of degrees in pretentious fluff.

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I didn't get to college on the strength of my advanced level grades. Part of the reason, I gained just one acceptance, may have been a generous desire to assist a disadvantaged individual. But I was unable to help myself. All I wanted to do was learn the technique of science to solve social problems, as it had succeeded so well in understanding nature.

I expect they would deny it out-right, that Pitirim Sorokin was making exactly the kind of identification of social research with social reform, that I was looking for, but was not what they wanted, so we were not pointed in that direction. When a student asked about Sorokin, the lecturer put us off with its difficulty, as only suitable for post-graduate study. Anyway, due to my deficiencies, as well as theirs, I didn't find out about Sorokin, till pension age, which was rather late, to make amends.

By the course third year, I had found out about HG Wells. The course principal, a man of remarkably equable temperament, came in one day, to remark that he'd looked and not found any sociology in HG Wells writings, and asked me for a reference.

I suggested Tono-Bungay.

He never came back to me about this. In the literary criticisms of Wells, it was acknowledged to be a foremost sociological novel. If I said so, tho, I would have expected to cause a demarcation dispute. Any opinion that came from literature was effectively banned from the sovereign territory of academic sociology.

This closed shop was alleviated by the odd kindness, even at course end. A junior lecturer told me, concerning his paper in the final: And if you mention HG Wells more than six times, I swear I'll fail you!

This set just the right tone. He knew, and I knew, I was struggling, so he threw me a bit of a life-line, as long as I didn't take it too far. Duly, having counted my sixth reference to HG Wells, in his exam paper, I prudently refrained from any more. And wondered what I was going to say next.

I suppose it was remarkable for a student to come up with an independent view, which was not only at odds with the teachers, but also happened to be right. Afterwards, it was passed on to me that someone had done a post-graduate thesis on "The sociology of HG Wells," at London university. This was, in fact, his old university.

More remarkable still was what I had more to find out about Wells as a social reform researcher, over the years, right into old age, and while reading only the other day, his book on a progressive, properly organised world education.

The letters of HG Wells, edited by David C Smith, I only obtained in later years, showed that at the turn of the twentieth century, he lobbied hard for a chair in sociology. He was still in early middle age, mainly with a reputation for science fiction novels and short stories. It was as if his genius for fantasy wanted to secure some hold on reality.

In late middle age, he saw the position of politician, as a means of exerting some influence in the world of practical affairs. In the early 1920s, he was twice a Labour Party candidate for MP from the London university constituency, a two member system, using the single transferable vote.

Proportional representation by the single transferable vote in large constituencies, of say a dozen members, was the system that Wells so passionately urged, as the only really effective means of representation.

Of course, a two member system is scarcely proportional and was not enough for Wells to be elected by the conservative university mentality.

There is no doubt that had Wells become an MP, he would have resumed the attempts of John Stuart Mill to get a bill for STV ("Mr Hare's system") passed in the Commons.

This was as well as Wells preoccupation with replacing war by international law. In this respect, he thought the Conservatives too imperialist, compared to Labour and the Liberals, tho he was clear that the latter were as big a cheats as the former, in banishing proportional representation from practical politics.

Wells had the knowledge of effective representation in politics. He then went on to publicise the need for the effective representation of

knowledge itself. In these and other things, he was making a great contribution to human progress and prosperity, admittedly in the tradition of thinkers like Mill and Diderot.

At seventy years, the World Brain or World Encyclopedia may be regarded as Wells third attempt to move from ideas to action. It was the difference from being an educator to an educationalist.

The review, that dismissed Wells as either, may perhaps be countered here.

In 1916, Wells novel, Mr Britling Sees It Through, was a top ten publishing success in the United States, as conveying the distress of the Great War. And it does do that, tho it is a very average sample of his novel writing.

That catching the national mood was far out-stripped by The Outline of History, in 1920. This was nothing less than a historic attempt to put international relations on a new footing as one story of all mankind.

In the United States, this was the number one bestseller for two years running, and still remained in the top ten, in the following year.

The writing of that encyclopedic history, in the space of a year or so, was the cause of some astonishment to those that knew. It made him so ill from over-work that he had to be sent off, immediately afterwards, on a long holiday to recuperate.

Some lady in America claimed to have written the history herself and the lawyers made a killing out of this delusion. But Wells showed no resentment against this injustice, that cost him so dear in work, health and wealth.

Wells later wrote two more specialised encyclopedias, of more limited appeal, on biology, and on human ecology, as he called it. Whatever Wells wrote is usually lightened by that intelligent mind.

Now a few words against the dismissing of a World Brain, as scarcely worth a mention as a precursor of the Internet.

The fact is that the phrase “world brain” unavoidably associates itself with the Internet, which is analgous to the neural network of the brain.

The following lengthy quotation refutes the claim that the World Brain scheme was totalitarian in inspiration. (Alluding to the conservatism of universities doesn't make one a totalitarian.) And the rest of the quote gives as good an intimation, as any, of the Internet. So, I give Wells the last word.

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Quotation from the chapter:

The brain organisation of the modern world. (1937.)

I can imagine quite a number of obvious preposterous mischievous experiments, a terrible sort of world university consolidation, an improvised knowledge dictatorship. Heaven save us from that! We want nothing that will in any sense override the autonomy of institutions or the independence of individual intellectual workers. We want nothing that will invade the precious time and attempt to control the resources of the gifted individual specialist. He is too much

distracted by elementary teaching and college administration already. We do not want to magnify and stereotype universities. Most of them with their gowns and degrees, their slavish imitation of the past, are too stereotyped already.

... I imagine it as a permanent institution – untrammelled by precedent, a new institution – something added to the world network of universities, linking and coordinating them with one another and with the general intelligence of the world.

... This Encyclopedic organisation need not be concentrated now in one place; it might have the form of a network. It would centralise mentally but perhaps not physically. Quite possibly it might to a large extent be duplicated.

If a thing is really to live it should grow rather than be made. It should never be something cut and dried. It should be the survivor of a series of trials and fresh beginnings – and it should always be amenable to further amendment.

... And while on the one hand we have this world-wide receptivity to work upon, on the other hand we have among the men of science in particular a very full realisation of the need for a more effective correlation of their work. It is not only that they cannot communicate their results to the world; they find great difficulty in communicating their results to one another.

... And for me at any rate this is no Utopian dream. It is a forecast, however inaccurate and insufficient, of an absolutely essential part of that world community to which I believe we are driving now. I do not believe there is any emergence for mankind from this age of disorder, distress and fear in which we are living, except by way of such a deliberate vast reorganisation of our intellectual life and our educational methods...

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The sixth extinction.

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Humanity as a catastrophe to other species if not itself.

Man is the cause of the sixth mass extermination of species in the history of this planet. It goes on daily. There is no program to identify and describe all species. We have no idea how many life forms there

are. Many creatures are disappearing without ever having been discovered.

The vast evolutionary experiment all around us is a unique and irreplaceable lesson in life's potential, which we are ignorantly trampling over. Nature is our teacher in the foods and medicines of plants but is also ignored at our peril. Mankind might become its own victim, too.

Such is the message of a publication in 1995, by Richard Leakey and Roger Lewin: *The Sixth Extinction. Biodiversity and its survival*.

Richard Leakey speaks as a practical conservationist (of the hard-pressed elephants in Kenya) as well as a modern theorist radically qualifying classical Darwinism.

Bible-inspired Catastrophism has come back into prominence. Darwinian evolution is by gradual change, through inherited small advantages in adapting to the environment. But environmental catastrophes cause indiscriminate mass extinctions. Survival then depends on wider distribution of groups of species (or clades) which fare better no matter how many species they contain. Smaller creatures are less vulnerable than large.

As disasters reduce evolution from a question of good genes to good luck, "the balance of nature," radically disturbed, gives way to the unpredictable fluctuations in population dynamics that chaos theory shows can lead to a complete collapse of the eco-system.

Island ecology has been compared, to rain-forest fragmentation, to find the relation between the size of an area and the number of species. It has been empirically found that the number of species doubles for every ten-fold increase in area. Leaving isolated conservation areas, in a sea of agriculture, may not be enough to save many species.

In february 2004, the Royal Society for the Protection of Birds said \$25 billion more a year was needed to establish a working system of protected areas for wild life. The record of the developed countries is "appalling" and they were just dragging their feet.

Also, there is a humpty-dumpty effect that prevents eco-systems being put together again, once disbanded. Jim Drake found it is not enough to co-habit a community of species again, in whatever order was tried. To reach a persistent state, an eco-system had to pass thru a whole range of stages.

Humanity is the greatest catastrophic agent since an asteroid wiped out half of earth species, sixty-five million years ago. This time the explosion is the human population explosion.

By not recognising other life forms, we are saying they are not important enough. It is a mistake of human pride before an ecological fall. Or, for that matter, a moral failure from a religious fall. Biologists, and the community of scientists in general, are having to become like Biblical prophets warning of the catastrophic crash awaiting the human population explosion. The eco-system may not be able to adapt in time to rapid global warming, disrupting its stability, on which survival depends, with chaotic and unpredictable results.

Not to mention the stock-piles for biological warfare, there are natural air-borne viruses, for which there is no known cure, virulent to humans as well as other animals. These natural threats exist in the wild, like pandemic accidents waiting to happen. Ebola belongs to the hanta group of viruses, causing hemorrhagic fevers that kill at rates of 80% in a few days. [This review was written a decade before a desperate ebola out-break in West Africa.]

This is what happened in 1545 in Mexico, leaving 12 to 15 million dead, after a great drought. (Ebola may have killed more than half the chimpanzees and gorillas in much of central Africa.) Virus carriers such as mice spread the disease as they concentrate at water holes. When the rains return, their population explodes and other species contract the disease from breathing the dust, where their droppings are found.

Thus, the unstable swings between drought and flood caused by global warming and deforestation may expose human and other life to the full force of such disease "time bombs."

Scientists at the London School of Hygiene and Tropical Medicine (in the British Medical Journal, february 2004) said many animal experiments may do little to treat human disease. Much research is poorly conducted and evaluated and in need of systematic review before new experiments. This was a boost for animal rights activists. (A counter-attack, the same day, came from the Royal Society, but that isn't speaking in a specialist capacity.)

In october 2003, the animal welfare group, Compassion in World Farming sought to have modern chicken breeding and rearing outlawed by the High Court. Giving free range was the more humane and healthy practise of animal husbandry.

Not having the respect, to learn from lifes diversity, is arrogance, akin to ignoring human rights. Neglecting the quality of life and education for all species diminishes all humanity, by failing to promote all lifes potential, and forcing or habituating a parasitic existence on our fellow creatures.

Natural causes of extinction and their human promotion.

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The sixth extinction is a new kind of extinction in that it is caused mainly by the invasive effect of a single species (man) on others, under-mining the life-support system between life forms, that is the eco-system. Man is not the only threat to survival of life on earth.

Asteroids have been mentioned. They have certainly hit earth before with more or less devastating effect. Current technology could not prevent the more unfortunate scenarios of a major asteroid strike. The problems of interception were, if anything, under-estimated by recent disaster movies on the subject. Asteroids are hard to spot because small. Some are dark and simply may not be seen. Some orbits, a sling-shot from the sun maybe, make it hard to see them coming with enough notice. No doubt, granted technical progress, the situation would become more hopeful, when the next big strike comes.

Time is of the essence, with regard to another repeated natural catastrophe. The statistics of volcanic eruptions shows that Earth is over-due for the big one. That is an earth explosion, probably from somewhere in the Pacific Ocean volcanic rim, sending shock waves and tidal waves around the globe, and blotting out the sun's rays with an ashen layer of clouds for years on end. Crops would fail and animate life starve, including an estimated loss of one billion of the earth's current six billion people.

A volcanic eruption is believed to have almost exterminated mankind. Genetics show that the human race is all descended from no more than a few thousand survivors, from pre-historic times. The

worst known explosion caused 100km crater, 74,000 years ago at Toba in northern Sumatra, enveloping the planet in a "volcanic winter." The regularity of the geyser "Old Faithful" in Yellowstone National Park, has been compared to the ticking of a volcanic time bomb, geology shows is over-due, for one of its regular mega-blasts, that would put an end to much of human and other life.

95% of active volcanoes are by the sea or on island chains. Seasonal shifts in sea levels can stress the earth's crust enough to raise the incidence of eruptions. Bill McGuire team of European scientists showed, in a study of the huge sea level changes of the last ice age, that more explosive blasts occurred when sea levels were changing most rapidly, either up or down. He warned that this was likely to be the effect of global warming, raising the sea level in the coming century. (Life. *The Guardian* 6 May 2004.)

Warmer oceans could also act to release the West Antarctic ice shelf raising sea levels ten times the predicted increase. The sheet only rests on submerged islands, and some are volcanic with clear water over them, whose eruptions could help dislodge the shelf. Stephen Schneider says it has happened before and could happen again but no-body is quite sure when. Often under-water, volcanoes or earthquakes or the masses, they may dislodge into the sea, set up tsunamis.

If and when this happens, Geohazards professor Bill McGuire (on 12 October 2000) said "the human race will face the greatest natural catastrophe in its history." That is, presumably, unless another geohazard gets there first.

The tsunami was popularised (if that's the right word) in the SF movie *The Day After Tomorrow*.

Sunday Times reviewer Cosmo Landesman said:

Unfortunately, this film also wants to be a post-9/11 tribute to survival and the human spirit, when it should be an unabashed tribute to human stupidity.

The biggest danger may be from climatic chain reactions. In particular, natural causes of extinction could be promoted by humans. Obviously, if the Earth is filled to capacity with human populations, there is not going to be much room for millions of people to move away from disaster areas, thru flood, fire, drought, disease, crop failure etc. Even in a period of natural stability, human conflicts over territory are serious and threatening enough.

Another instance, of the need for territorial safety margins, is the natural history of sudden climatic changes, which puzzled palaeontologists. Evidence has correlated these changes with shifts in the direction of ocean currents. The warm waters of the Gulf Stream have switched many times from their crossing the North Atlantic Ocean round Northern Europe.

Over the recent past, a twenty per cent decrease in current speed has been estimated. Global warming is causing the Arctic ice sheet and Greenland glaciers to melt and swelling the great Arctic-bound Siberian rivers to dump huger quantities of fresh water into the stream. This slows down and makes sink earlier the heavier salty water warmed in the south. This would cut short the Gulf Stream conveyor belt motion that continually re-supplies the shores of north-west Europe with warm water.

This energy warmth is worth a million power stations output to the British Isles. Its loss would give the region a climate like Canada at the same latitude. A country like Ireland, which retains its reduced post-famine population from the nineteenth century, should be able to sustain its population under a greatly reduced growing season. That is provided the Irish population does not greatly increase. The

French governments Napoleonic delusions are pursuing a subsidised population expansion policy, likely to prove unfortunate.

When the Gulf Stream might stop is not known. In 2004, on the BBC *Horizon*, scientists best guess was in maybe fifty years, possibly as soon as twenty years. They don't know whether the change would be gradual or as without warning as a switch.

A sudden change would be beyond the capacity of vegetation to adapt. It would be a crash in life-support systems. Britains sixty millions or more people already cannot feed themselves. The loss of the Gulf Stream would surround the island with icebergs. Like *The Titanic*, sinking without half enough lifeboats, Britain would not have half enough arable land to support its population.

These climatic changes are not just local problems. Soil-depth readings have shown that direction changes, in the Gulf Stream and its warm moist air, have also coincided with the desertifying of the globes equatorial rain-forests, the oxygen-producing lungs of the planet. The Hadley Centre forecasts that global warming will kill off tropical forests to such an extent that instead of soaking up carbon dioxide they will add more to the atmosphere than all the power stations and cars of the past 30 years.

Climatologists believe that the switch to a runaway global warming that happened 55 million years ago may be repeated under present conditions, that threaten mass releases of methane, from under the permafrost of warming Siberia and from crystal structures on continental shelves destabilised by warming oceans. This caused a mass extinction comparable to the end of the dinosaurs, 10 million years previously. Ocean modeler, Stefan Rahmstorf says, more recently, North Africa turned from a swamp into a desert in a few years. (Fred Pearce, "Nature plants doomsday devices," *The Guardian*, 26 november 1998.)

Lack of democracy results in injustice, ignorance and incompetence.

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As well as causing global warming, 200 years of fossil fuel energy has also supported a much larger human population than normal. "If you plot the logarithm of the body sizes of mammals against the log of the population density, you get an inverse relationship...that bigger animals occur at lower densities than smaller ones." (Tim Radford, *The Guardian*, 22 July 2004.)

Instead of well over 6 billion humans, there would be one or two million, compared to roughly the same numbers of one or two varieties of chimpanzees, gorillas and orang-utan. There are perhaps more than 400,000 great apes but human population increases by that amount every two days. The great apes and many other species are being squeezed out of existence: "humans and their livestock now consume 40% of the planets primary production, and the planets other seven million species must scramble for the rest." That includes about 4000 types of mammal.

Fatal problems may be caused by one climatic change. But many such changes are possible, inter-acting in ways too complex to understand. One moral is that too many people don't have enough room on the planet to save themselves, whenever nature comes up with unpleasant surprises. Tim Radford and Paul Brown say:

After years of argument, not least from the Bush White House, it is hard to find a politician on the planet who does not agree with these basic scientific facts and the danger that they pose. The

problem remains getting the international political will together to do something about it - both to prevent the situation getting rapidly worse and coping with the problems we have already created.

Science or knowledge has more to offer than just ecology in promoting the political will to save the eco-system. The so-called political will may not be representative of the public will after informed debate has taken place. That is to say a dictatorship is more liable to make mistakes than a parliamentary democracy. Science and democracy, properly understood, are one learning process, by which genuine progress can be made.

The eco-system is already being recklessly ravaged by commerce and threatened by escalating wars. The US department of Energy figures show that the United States and Australia emit most carbon but many other countries are not far behind and catching up. The American "Union of Concerned Scientists" (www.ucsusa.org) has protested against government obstruction of environmental health research.

Tho the US and Australian governments defied the Kyoto protocol, the Russian government signed the treaty making up the number of industrialised nations needed for the treaty to become international law.

The Environment Agency (30 july 2003) said higher fines related to company turn-over and more prosecutions are needed to stop firms polluting. Some of Britains biggest and best known firms are repeat offenders: one-fifth of fined firms in 2002.

For decades farmers have been allowed to get away with spraying pesticides up to peoples hedges, because voluntary talks, to farmers not to do it, just don't work. People are not informed and feed-back is

lacking. Georgina Downs and family suffered twenty years of induced illness. She prepared a case costing her thousands of pounds and taking three years. *The Sunday Telegraph* (8 august 2004) reported that Britains minister for rural affairs was "satisfied that the protection afforded to the public was perfectly adequate...citing for his support the views of a man who had not seen the evidence which prompted the inquiry in the first place." Also in august, a report came out on a big increase in brain-related illnesses such as Alzheimer's disease.

These David and Goliath campaigns, by such as Miss Downs, are wholly admirable but no substitute for changing the constitutional rules of the game to an effective political and economic democracy. Indeed, such people would have a realistic chance of becoming representatives (with the voter-centered electoral system of freely transferable voting) as well as having genuine representatives of policy and economy, respectively in the political and economic houses of parliament.

The Bush presidency refused to sign the Kyoto treaty for globally reducing greenhouse gas emissions causing global warming. So, the Inuit people of the Arctic are making a pioneering effort to hold the US government legally responsible for violating their human rights. Another faraway people, marginalised by the march of "progress," say "America's refusal to sign the Kyoto protocol will affect the entire security and freedom of future generations of Tuvaluans." In certain coral islands, little more than 20 inches above the level of the South Pacific, ever more often, the sea wells up thru the porous rocks to submerge their land. (Mark Lynas, *The Observer* 5 october 2003.)

Worldwatch Institute of US researchers say one quarter of the world population have entered the consumer class and enjoy life that used to belong to the rich. This will soon include more people in China

than the USA. With it come the draw-backs of the West's poor quality of life, the impoverished and polluted environment, unsustainable devouring of natural resources, stressful demand on time, diet and transport problems. Just one in three Americans say they are very happy, the same as in 1957, when the US was half as wealthy. The king of Bhutan seeks not to promote gross national product but gross national happiness!

Tokyo United Nations University, in 2004, warned of a warmer and wetter world with more storms, rising sea levels, deforestation, increasing population. In 50 years, this should see major flooding affect twice as many, or 2 billion people. The UN World Water development report, in March 2003, predicts 7 billion could face water shortage, on average a fall of one third over 20 years. Every day, 6000 children under five die from diseases linked to dirty water.

The Democracy Center letter from Latin America explained how a transnational firm privatising water resulted in charge hikes that the poor could not pay, causing a revolt that was put down with casualties. The ousted transnational then moved a multi-million lawsuit against the third world country. Papers leaked to the BBC (25 February 2003) suggest the European Union is pressuring some of the world's poorest countries to let multi-nationals take over their basic assets, privatising water and electricity companies. The World Development Movement says this is their real intention, despite EU claims they do not want to privatise state-owned firms.

16 October 2003, World Food Day, the UN special investigator, on the right to food, reported that the number going hungry increased, from 815 million in 2001, to 840 million in 2002. A child dies from the effects of hunger every 7 seconds. Every 4 seconds, someone goes blind for lack of vitamin A. This is an "outrage" in a world with

enough food. In the same month, UNICEF reported that one billion children in the developing world, more than half its population are severely deprived. 647 million are in absolute poverty.

Perhaps, the greatest wasted resource is human intelligence. With global electronic communications, it would be possible also to educate every child thru media like the internet. They would have ideas we never thought of and skills we lack, that would be invaluable to all mankind.

In april 2004, BBC World tv asked 1500 viewers the most important problems: 52% said US power and large corporations; corruption; 50% wars and terrorism; 49% hunger; 44% climate change; 38% illiteracy. In march 2004, the campaign group Global Witness said laws should compel firms to disclose pay to governments. There is a global epidemic of financial scandals. Billions go unaccounted-for in some of the worlds poorest countries, especially in Africa. Collusion, of oil and mining companies with governments, for rich natural resources, acts like a curse to keep the locals in poverty.

As the poor are left in more poverty, the rich seem to attract riches. A whistle-blower alleged bribes paid by Britains biggest defence company to rich buyers to win big contracts. (*The Sunday Times* 25 july 2004.) Since 2002, departments and enforcement agencies received more than 20 such allegations of corruption over-seas, albeit that may be the way things are done with the customers in question.

A G8 Summit of leaders from the most powerful national economies, to discuss Third World poverty, was conducted on "European Vision" - not a policy but a luxury liner. The previous year bill was £500 million. The cost for 2001 could have been far in excess of £100 million. Gordon Rayner (*Daily Mail*, 21 july 2001) reported:

This is the equivalent of the combined annual national debt repayments of Malawi, Mali, Mozambique and Burkina Faso. It is double the entire health budget of Tanzania, which has a massive Aids crisis - one of the subjects on the agenda...

Recent figures suggest that if all Third World debts were cancelled and repayment money was spent on healthcare, clean water and education instead, the lives of 19,000 children per day would be saved.

Aid workers have found out that such a beneficial switch of resources does not happen sometimes without making themselves highly unpopular and getting thrown out of work. Peter Griffiths, working for the World Bank, found that a free market model economy was being imposed on poor countries such as Sierra Leone that were not ready for it. Seven months previously, the World Bank had forced the country onto a floating exchange rate, which collapsed the value of its currency. Free market traders would not import rice that people could not pay for, even when the currency was ten times its current value. The withdrawal of rice subsidies would lead straight to famine.

Moreover: "Third World governments frequently fire consultants, saying that they are incompetant or that they cannot get on with the locals. The real reason is usually that they are about to expose corruption, or the misuse of aid money." Aid organisers, politicians, civil servants, marketing board officials earn personal commissions from the buying and selling of grain in a famine.

It's so much easier to blame a solitary whistle-blower. The country cannot afford to fall out with some wealthy global organisation. Griffiths (*The Observer* 31 august 2003) remembered:

I knew - everybody in the aid industry knew - that only five years earlier Steve Lombard had prevented a famine in Tanzania. He had had to put all he had into this, tapping all his contacts around the world, because officials refused to act. The Tanzanians insisted that the United Nations Food and Agricultural Organisation fire him. FAO, the World Bank and the aid community did nothing to protect him. He was indignant, furious, betrayed. Over the next three years he drank himself to death.

The disasters that dictatorships bring upon people are well documented. A recent example, which confirms a depressing trend thru-out the world, was President Suharto planning to make Indonesia self-sufficient in rice again. He ignored scientific advice that using canals to drain Kalimantan peat swamp forest would be "an ecological and economic catastrophe." (Fred Pearce, "Borneo's chainsaw massacre," *The Guardian* 18 february 1999.) Forest clearing was controlled by "Mafia-style organisations," the chainsaw being "a license to print money."

The results were uncontrolled fires spreading especially along the dried canal banks - there was a mass wearing of smog masks - and uncontrolled floods, that drowned plants and lost livelihoods, and endangered the main habitat for the orang-utan. Also at risk are sun bears, clouded leopards, 30 other mammal and 150 bird species as well as "plants and fish seen nowhere else." With the collapse of its currency, Indonesia has been selling off its priceless natural assets. The release of the carbon from tropical peat swamps could add critically to global warming. And the peat has no minerals to grow rice.

When Suharto came...to ceremonially harvest the first rice crop, nothing had grown. So officials transplanted rice from elsewhere

to fool him.

That is the classic consequence of autocratic rule. The intolerance of opposition and criticism is compounded by fear to admit to "the great teacher" that his plan has gone wrong. His underlings don't want to be punished for incompetence, that he would never admit was his own.

This is an old story. Max Prangnell, Cal McCrystal and Hege Duckert reported (in *The Sunday Times*, 11 september 1988) reported that

a combination of human ignorance, greed, poverty and inertia has thrown the (Himalayas water) machine out of control.

Growing populations with an increasing need for food and livelihood are stripping the forests from the habitable areas on the southern slopes, increasing the frequency and devastating power of the floods...

Some environmentalists claim that at least one plant or animal species becomes extinct every half hour...

Tropical forests are the main dispensary of raw materials for medicines. One recent study, for instance, showed that 70% of the 3000 plants identified by the US National Cancer Institute as having anti-cancer properties come from rain forests.

Lost and forgotten Amazonian civilisation, wiped out by disease from Iberian conquerors, was recently found to have developed a renewable agriculture. The lack of this, in the past few thousand years, has been largely responsible for the relentless desertification of the planet from the early middle eastern to modern western civilisation. Found around formerly settled "jungle," "Terra preta" or "dark earth" is, unlike the usual yellow earth, mixed with organic semi-burnt charcoal, retaining minerals during rains.

Unlike the ruinous nomadic slash and burn agriculture, terra preta is thought to have a bacterial basis that allows it to reproduce itself from leaf fall 20 years after being mined. BBC Horizon (20 december 2002) says this property is being researched to produce sustainable agriculture in the third world. They might have added the old and new worlds as possible beneficiaries.

It would be wise, as well as just, to educate the skill and ingenuity of the whole world: "educational democracy" if you like, as well as political and economic democracy. Power and wealth, controled by the few, promote ignorance of the needs and abilities of the many people, who would confer greater benefit to all.

autumn 2004

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The political system fails the eco-system.

**Over thirty years of Green warnings
and the hope for grass roots reforms.**

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The Club of Rome and *The Limits To Growth*. (From 1968)

In april 1968, a meeting was convened by Dr Aurelio Peccei, that was to be called the Club of Rome. They had no shared ideology. But all believed that current institutions and policies could not cope with "the present and future predicament of man."

The world-wide stir created by the Club of Rome report, *The Limits to Growth*, reached even into Solzhenitsyn *Letter to Soviet Leaders*. There he prophesied that the huge arms build-up would all have to be scrapped and was an enormous waste of resources.

In July 2001, President George W Bush offered an agreement with President Putin to reduce somewhat their still over-whelming nuclear missile arsenals of about 10,000 war-heads each.

But the Bush administration caused concern with its treaty-breaching missile defense program and unwillingness to come to terms with the Kyoto agreement on limiting global warming. This American

president was felt to be an oil profits leader, rather than having energy-efficient and pollution-minimising policies.

In 1972, the executive committee of the Club of Rome commented:

Short of a world effort, today's already explosive gaps and inequalities will continue to grow larger. The outcome can only be disaster, whether due to the selfishness of individual countries that continue to act purely in their own interests, or to a power struggle between the developing and developed nations. The world system is simply not ample enough nor generous enough to accommodate much longer such egocentric and conflicting behavior by its inhabitants. The closer we come to the material limits to the planet, the more difficult this problem will be to tackle...

The last thought we wish to offer is that man must explore himself -- his goals and values -- as much as the world he seeks to change. The dedication to both tasks must be unending. The crux of the matter is not only whether the human species will survive, but even more whether it can survive without falling into a state of worthless existence.

Long after publication, *The Limits to Growth* was given a working-over for its pessimism as to the amounts of non-renewable resources waiting to be found in the ground. Also belabored was the crudity of the socio-economic feed-back model, using the more limited computational resources of the period.

Such criticisms were anticipated. And the analysis served as a prototype for Green politics. *A Blueprint for Survival* also carried graphs of up-curves of pollution and down-curves of non-renewable resources. This manifesto coincided with the launch of an Ecology party, in the UK, which later followed the German example, by re-naming themselves the Green party.

The launch into conventional politics has been moderately successful. And there are already signs of green politics being neutralised by power politics, as happened to the socialist movement.

With justice, the general public seem to have little faith in the political system. Environmental organisations have replaced political parties for mass membership.

The parties, competing with each other to represent, are really monopolists, between themselves, of representation and therein is the disillusion with politics. They have robbed Parliament of its role as the nations decisive forum. This is widely perceived. Anthony Barnett, a deputy editor of Labours *The New Statesman* attacked the "...contempt in which the new governing elite holds MPs." He cited how the PM "lectured" MPs that they were not in parliament to have ideas of their own but to follow party policy. This was in a *Daily Mail* article (19 february 2000), *The Death Of The House. Under Mr Blair Parliament is an irrelevance and MPs are little more than a joke.*

Nothing could be more revealing of how right-wing New Labour is as intolerantly doctrinaire as the old Labour Left. They amount to nothing more than a conspiracy of antagonism, even if it is partly a self-deceiving conspiracy, of which left and right may not themselves be fully aware. As with left and right wings within parties, the same applies between right and left wing parties, which merely leave the voters to choose either side of the same old authoritarian coin.

The disregard for parliament was trumpeted by Tony Blair announcing the British general election, not to the House, but to a childrens school. One of his ministers merely said it was "odd." The Tory chairman spectacularly missed the point by criticising Blair for bringing children into politics! Those comments in themselves reveal how little esteemed are MPs.

Odd indeed! It is inconceivable that one of the great parliamentarians would have committed such a breach of courtesy, as if he were the only pebble on the beach.

Many campaigners turn to publicity-seeking action, for which they hope to secure popular approval and oblige the government to follow their lead. Democracy has been forced into some tortuous and dubious channels of expression.

Paul Harrison: The Third World Tomorrow (1980). And their "brain drain" today.

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Inside The Third World, Paul Harrison pilgrimaged thru poverty. His 1980 sequel gave examples across the globe of how the poor are trying to pull themselves up by their own boot-straps. As a matter of fact, this old saying doesn't apply, because the world poor are usually too poor to have any boots to strap.

Only the elites of third world countries can afford to be served by Western-style well-heeled professionals. The insistence on only the best standards of service obliges the world poor to go without, indefinitely.

Harrison discerns a change from this all-or-nothing approach. Hence, the rise of the bare-foot professional: the bare-foot businessman, the bare-foot doctor, family planner, township planner, ecologist, literacy teacher, and intermediate technologist inspired by Ghandi and Schumacher, etc.

Instead of pouring money into the bottomless pits of prestige projects, aid could be put into local self-help projects. A West African village is taught an Asian-style rice-growing project which happens to suit its particular ecology. Local artisans or black-smiths may be re-trained in relation to sometimes preferred factory products for agriculture or industry.

Traditional healers may be taught the basic lore of modern medicine, as summarised, for the bare-foot doctors of the Andes, in a 110-page *Health Promoter's Manual*, using simple language with illustrations. Paul Harrison says:

The science of medicine itself has to be decolonised, de-mystified, de-professionalized. A new appropriate technology of simplified medicine has to be developed: low in cost, easily mastered by ordinary people, using local resources wherever possible and drawing on those traditional methods that are known to work. To quote Halfdan Mahler... "We must break the chain of dependence on unproved over-sophisticated and over-costly health technology," and evolve an "essential health technology, a technology which people can understand and which the non-expert can apply."

In 2001, the British medical profession deplored the continued influx of skilled immigrants to bolster the over-stretched National Health Service, because it deprived poor countries of their training.

The Daily Mail (21 July) says 15,400 British nurses are set to qualify in 2001. But this will be exceeded for the first time by the number of over-seas nurses recruited. A new high of 50,000 over-seas nurses will staff British hospitals, as a result of government recruitment and increased applications from abroad.

South Africa, Ghana and Jamaica have protested against the NHS "hoovering-up" their nurses.

An agreement has been signed with India, to siphon off their "surplus" of nurses. 6000 Indian nurses will earn far more money, some of which they may send home. Some may return to their home-land with greater expertise. This level will surpass the current highest number of applications from the Philippines.

As with nurses, so with teachers, in 2001 Britain had the biggest shortage in 36 years, with 5000 vacancies expected. Moreover, head teachers said they were unhappy with perhaps 6000 accepted teachers, in England and Wales.

These short-falls are as nothing compared to the situation in India, South Africa, Namibia and Nigeria. Voluntary Service Overseas has accused Britain of "looting" teachers from developing countries. VSO chief Mike Goldring said:

Try telling the 40m Indian children with no access to education that British children are more deserving.

Harrison and Mahler egalitarian policy is also needed in the over-developed West.

The bulk of all our needs are basic needs, which may be met by basic solutions. The needy, themselves, are most of all in need of a no-frills service in every department of their lives.

Paul Harrison talks of educational experiments, often opposed, that cut out the "academic twaddle" for things people need to know. Growing a row of organic vegetables might be more healthy than too much homework.

Children of rich, as well as poor, countries might be taught the basics of first aid and hygiene, as part of "the national curriculum."

The illiterate English alphabet, illiteracy and lawlessness.

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Schools could have a spell-as-you-speak rational English alphabet, of about the existing 26 letters, to abolish the functional illiteracy rate of over twenty per cent. Adam Smith said the professions are conspiracies against the public. In this respect, the literate may be the biggest closed shop of them all. Perhaps seventy per cent of the world population is illiterate. Equality starts here.

The lack of respect for democracy may be discerned in this basic issue. Literacy, equally available to all, partly depends on the liberty to spell rationally, and its fraternal tolerance by those who can spell conventionally. The testing for conventional spelling trivialises literacy teaching. It professionalises the preaching of mindless conformity, in the way we spell.

Perhaps, school testing in general has more to do with expensively promoting unquestioning mediocrity than anything else. Of course, this has been said by a "school" of radical educationalists. In 1969, Neil Postman and Charles Weingartner made their case with humor and humility, in *Teaching as a subversive activity*.

Literacy is the foundation of all the specialist forms of knowledge that the professions govern. Exclusive preserves might share their knowledge, at least of the essentials.

European Union teachers can no longer use the stick or cane on their pupils to enforce the will of the system. But the system enforces itself on the teachers, who are tested as much as the pupils, to see if they make the grade.

It is as if the examiners of orthodoxy fear any creative lack of conformity so much, that they must purge it in the teachers, as well as their pupils.

In 2001, a University study from Ulster (a province with the highest academic standards) said up to fifteen per cent of children are "functionally illiterate." Other studies have put the rate at over 20% for adults. As Huxley wrote, in *Brave New World*, the system is not made to suit the people. The people are forced to suit the system. The real source of functional illiteracy is not so much in the teachers and the taught as in the insistence on our "functionally illiterate" English alphabet.

In the first place, it is our unreformed alphabet that cannot spell properly. That is where the blame really belongs and with the prejudices that refuse to admit it. To put the blame on "poor teaching" is a mentally lazy excuse to do nothing to intelligently reform English spelling. Its absurdities are a convenient habit for the complacently literate, who don't care about the trouble it causes the "illiterate" and the educational and economic inefficiency it is bound to generate.

For failing to see the real cause of illiteracy, throwing money at the problem will not solve it either. In September 2000, the Scottish executive allocated £22.5m. to end adult illiteracy within ten years. But the United States threw a mountain of money at illiteracy to no noticeable effect for "the Great Society."

It reminds me of many an old movie, of my childhood, that had a

fortune spent on the costumes, sets and casting but neglected to find a decent script.

Teachers report that seriously disruptive pupils are often covering-up for poor skills. Indeed, as many as 60% of prisoners, in England and Wales, are illiterate.

Moreover, the unruliness of children is unfair on teachers. The right to children of freedom from fear (one of Four Freedoms by Franklin Roosevelt) should be shared by teachers. Children have responsibilities, as well as rights, which they must learn the sooner the better. This implies practical education of young people in the law, with childrens courts. (The amateur lawyer is the subject of a sequel chapter.)

This is an example of the need for education to teach youngsters how works the world they are going out into.

The Mad Officials.

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In 2001, the teachers were so over-burdened with the latest testing regime that they simply declared it unworkable. But the teachers are not the only demoralised profession. The home secretarys promise to reduce paper-work was received with a slow hand clap by the police federation. It drives experienced officers out of the force. Doctors, too, have a crippling load of official documentation to complete. The medical profession delivered an out-spoken vote of no-confidence in government reforms, at the time of the 2001 general election. The British Medical Association balloted the 36,000 General Practitioners. Of the two-thirds that answered, 86% said

they would be prepared to resign, "unless ministers cut bureaucracy and give them more time with patients." (*Daily Mail* 2 june 2001.)

At present, in Britain, the professions command the heights of a status society, with high inequalities of income in their favor. On the re-defined National Socio-economic Classification, *The Daily Mail* (17 march 2001) captioned: "The New Pecking Order...Do you know your place?" The emphasis was on grading occupations according to contracts, conditions, prospects and security.

More important is to define constituencies of work for their coherent role in the functioning of society. Instead of a pointless pecking order, there should be feed-back to the elected representatives of those vocational constituencies to the second chamber of government.

BBC Ceefax (26 july 2001) reported *Management Today* saying British bosses are the highest paid in Europe, by more than £100,000. Chief executives earned over half a million pounds, an increase of 29% since 1999. Only US bosses earn more, with average salaries of £1m. But British manufacturing workers are the lowest paid, and the cheapest to dismiss, in the developed world. At £20,475, they are below the national average wage, and they also have put more time in than most of Europe. They are still incredibly rich compared to the rest of the world, four-fifths of whose people dont earn any money at all.

A carrot and stick economy weildss the "carrot" of plutocracy with the "stick" of bureaucracy.

Business has also long complained about being tied up in red tape. In 1993, the Single Market imposed a huge burden of 218 harmonization directives, which, in many ways, left the level playing field as far away as ever. So says a book written on the follies of the administrative laws of the European Union and their excessive and ritualistic, rather than realistic, implementation by civil servants and inspectors in Britain.

A "checklist mentality" reeled-off all the points they'd been told to look out for, at college or seminar, demanding thousands be spent, and forcing shops and businesses to close down. Yet, in this pre-occupation, inspectors lack of experience might lead them to over-look real risks posed to sought-after objectives of hygiene, safety, conservation, institutional caring or whatever.

The Mad Officials (1994) by Christopher Booker and Richard North gets its title from an essay by G K Chesterton, so quoted:

I should not be surprised if the law were like that; because in modern England there is practically no law to be surprised at.

Booker and North said:

wherever the monster (of bureaucracy) impinged on the real world, it invariably had the same effect. It threw out clouds of deadening jargon; it tied people up in absurd paperwork and form-filling; it made ridiculous demands; it asserted its power in a blind, wilful way; it crushed enterprise and independence; at worst, it turned far too many of those who fell under its sway into nothing more than uncomprehending and often fearful victims.

There is a way out from the carrot and stick of plutocracy and bureaucracy: democracy, in the economy as well as the polity. It

should mean greater economic equality and fraternity, as well as greater freedom from officialdom, for all classes.

The Parliamentary laws and administrative laws could be checked by a second chamber, representative of all occupations. This could redress the excesses of official administrative chores delegated to the public and private sectors. The occupations themselves, in concert with each other, must know the needs of their own work best, subject to the first chamber, the Commons, representing the interests of communities as a whole.

The closed shop, of the unions, was out-lawed by the European Union. But the professions, also should be more open. Their basic knowledge and most essential skills should be broadly based in the population, either thru a more practical general education or by a part-time work-force of trained amateurs on a basic income.

In 1980, Paul Harrison said "Reform will not be a Sunday school tea-party."

The world is dying. What are you going to do about it? *Sunday Times magazine* (1989).

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As prime minister, Mrs Margaret Thatcher once grouped Green activists among "the enemy within." It is thought that Prince Charles made her more aware of environmental issues. At any rate, she changed her mind about including Britains antarctic survey vessel in her current round of cuts. The ship sailed again to discover a hole in the ozone layer over the south pole.

The PM convened a conference on ozone layer depletion, which would make mankind more vulnerable to skin cancer, if we continued to fully enjoy our freedom merely to walk in the sun. To mark the occasion, The Sunday Times decided it was high time its readers all woke up to the folly of destroying our eco-system:

We are all polluters on this planet. We burn fossil fuels, we create waste, we ravage natural resources with little or no regard for the consequences. But time is running out. Our planet is becoming despoiled, rotten, overcrowded and barren. We could all be contributing to the causes; we will certainly all suffer from the effects.

The magazine focused on chemical spills into air or sea, killing people or marine animals, by the thousands or scores of thousands. Or the systematic pumping of factory wastes into rivers and seas, such as the North Sea and Mediterranean. Poisons are dumped on other peoples door-steps, or dump-ships used, even if illegal.

The magazine mapped deforestation and over-population, with a global sample of some of the more out-rageous and life-bereaving pollution disasters. Richard Mabey did an article on "the roots of civilization:" trees are the pillars of green society. After citing Europes tree-intolerance, he described the white North American settlers destructiveness as "pogroms of an arrogance and violence that rival those in modern Amazonia."

"The burgher that ate a rain forest" summed up the fact that "It takes 55 square feet of rain forest to raise enough beef to make a single American hamburger."

Still fighting a losing battle are the re-foresters. Some of their work was featured, especially Vietnams national effort and that of the World Wide Fund for Nature (WWF).

In 1969, *The Sunday Times* magazine disclosed the exposing of Brazilian natives to disease, under the caption of "Genocide."

Survival International was founded as a result. Its director Robin Hanbury-Tenison gave one of the most closely written articles in the magazines 1989 green issue, about the continued persecution and betrayal of the natives, "whose understanding of the medical and nutritional resources of the rain forest is unrivalled." Their land continues to be ruined, as shown in the familiar pictures of deserts of tree stumps.

The author put responsibility on 300 or so banks, trying to re-coup Brazil debts. Also, land reform is resisted by five per cent of the people holding 80% of the land.

Another sample of "greed, corruption and political ambition" featured tusk poaching and the threatened extinction of the African elephant.

The Sunday Times "The world is dying" rounded off with a survey of the Green campaign from such as Friends of the Earth, Greenpeace and the WWF.

(Not to forget an amusing, but serious, after-thought article on "poop-scoop" laws for dog-owners.)

How to save the earth. *Time magazine* (2000).

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Time magazine "Earth Day special edition 2000" has a good sample of spot-light articles, as one would expect. Besides being recent, at the time I wrote this, such a publication has its professional on-line counter-part. So, I confine myself to a brief discussion, here.

Time magazine established an Environment section in august 1969. That is little more than a year after the founder members of the Club of Rome met. In 1970, they covered Barry Commoner. His book, *The Closing Circle. Confronting the Environment Crisis* came out in 1971. (A new magazine, *The Ecologist*, devoted several pages to panning the book as "one-dimensional ecology.") Commoner reviewed how the 1963 limited nuclear test ban treaty came about:

This unexpected event was a tribute to the political effectiveness of the scientists' campaign to inform the public about fallout.

Radio-activity could be carelessly spread, while an information black-out was effectively imposed, as in war-time. PM, Harold Macmillan suppressed the truth about Britains first major radio-active leak from a nuclear power station. He feared the public would turn against nuclear power.

If so, it wouldn't be the first time the intuition of the "lay-man" was more reliable than the experts.

By millenium end, the rape of the planet goes on and an information war or propaganda goes on to excuse it. Looking back, it has to be admitted that the media have informed the public reasonably well. In the early seventies, I once remarked (by letter maybe to an editor of *The Ecologist*) that there seemed to be more environmental stories. I was told that I was right, because a group of journalists had got together to promote such news.

The media can mobilise opinion, as well as neutrally inform the public. Time magazine honored "Heroes for the Planet," sponsored by *The Ford Motor Company* which advertised its environmental credentials, in the Time Earth Day 2000 edition.

American individualism may be responsible for the cult of heroes. As CG Jung said, great historical events are profoundly unimportant.

The individual is not only the passive observer and sufferer of events but the maker of epochs.

The Sunday Times magazine, in 1989, was equally bent on reform. But it appealed directly to everyone: What are you going to do about it?

Readers were not given inspiring role models to emulate.

Paul Harrison gave examples from the third world of remarkable individuals. Granted, that the inspiration was of a more social emphasis. Community self-help organisations, with some expert and financial aid would start improvements, supported by further consultation and co-operation.

When you look at all three approaches to saving the planet, they perhaps all have one thing in common. They are all attempts to stimulate change *largely* from outside the system. In that respect, they all agree with the Club of Rome initiative.

The establishment has got us into this mess and has to be disestablished sufficiently to get us out of it again.

"Business as usual" depends on promoting wasteful "getting and spending." This conflicts with advert-dependant editors exhorting and mobilising ordinary people to be conservative of resources.

The mass media are also a part of the establishment, who know the rich and powerful personally. And there is perhaps some ambiguity in their minds. Do they really want to change the system enough to make the public interest effective?

Since Randolph Hearst, the media have short-cut between the people and their official leaders of parties or industry. If lawless means, sometimes, were employed, they became possible as democracy was proving to be not nearly as representative as it should be. To amend that, requires, at least, a knowledge of

democratic voting method and an extension of constitutional politics to economics, with occupational representation.

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The amateur lawyer and open source software.

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Other professions needing amateurs.

This is not a discussion for the experts but for people who know as little as me, if possible. Paul Harrison, in *The Third World Tomorrow*, showed why the expensive expert must make way for amateurs sufficiently trained to meet the essential needs of all in society, not just a rich elite. If they don't, relief for the very poor is postponed indefinitely.

Harrison also pointed out the lessons for our over-developed Western models of society. Besides his book, I reviewed the relevance of general training in essentials to Britain's over-strained health service and education system. Also, these and other public services, as well as businesses, are beleaguered by bureaucracy.

This chapter gives two more examples (computer programming and legal redress) of the general need to make practical knowledge more freely available.

"the law's delay" and the firms delay.

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The Law has been called "the oldest closed shop of them all." (This may have been the caption to a Telegraph supplement, as far back as the late 1960s.) For instance, there were complaints about the minimal redress from the Law Society of complaints about members of its profession.

A century earlier, in *Bleak House*, Dickens frankly stated that the cause of "the law's delay" (as Shakespear called it) is that it pays. Henry Fielding was a majistrate as well as a novelist. In *Tom Jones*, he has a character foolishly desire to sue, till her husband remonstrates that it would put a job the way of their lawyer relative, but it wouldn't do them any good.

Nowadays, Britain has a "Citizens Charter" to ensure standards of civil service. You would think scenarios, like the following, might be avoided.

Your small claims case eventually comes up for trial, after some few months. You hope it won't take more than an hour, at lawyers charges. But the judge decides it will take longer. The judge adjourns the case, for a later date in the crowded court time-table. On the second hearing, the judge can't decide to give a verbal verdict in court. A good while later, a written verdict is made. You fail to get the refund, you already took several months trying to obtain from the firm.

The judge gives the defending firm yet another chance to make amends, on *their* terms. The firm is so big and busy that they fail to collect the product for re-servicing. The defendant had said they would do the servicing in their own time. They took so long, they'd evidently over-looked you.

You go back to the court and claim the cost of servicing, to be done by some other firm. The judge, at least, has allowed for this in his verdict. It costs you another fee. You claim this cost, too, which wakes up your seller vehemently to refuse to pay it, while promising to collect the product for re-servicing.

Meanwhile, you are put under pressure to give-in to the seller, because their local court has not collected the payment from them, such as the verdict gave you a right to, if the seller didn't service the product.

The claimants local court told you, the claimant, to come back if you didn't receive the service from the defendant. But when you return to your local court, you are told, instead, to write to the defending firms local court to collect the default payment for defendants failure to service.

After several letters and months later, the defendants local court tell you, the claimant to go back to your local court to make the request. Only on the prompting of your local court does the defendants court pay the verdicts default payment, plus court fee for having to demand it.

At some point in this run-around, that the courts give the claimant, a staff member apologises, tho she is undoubtedly one of the few people in the whole dismal affair, you find no fault with. However, some man doing business with the court, at the same time, overhears, and not minding his own business, puts in a good word for the court system. His dismissive manner, about any need for the court to apologise, suggests a cosy relationship with them. No doubt, some people do very well out of the system, if not those who it is meant for.

We are talking about eighteen months failed attempts to get a resolution to a sub-standard sale, either on ones own terms or even the defendants terms.

Pit-falls awaiting the amateur lawyer.

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Traditionally, the law has been regarded as the friend of the rich. At the age of no more than five, when the family car was wrecked by a van ignoring the right of way, with snow and ice on the ground, I said: Why don't you get a lawyer?

My father replied: You never want to have anything to do with lawyers.

Eventually, the law was changed for the less well-off to take minor complaints to court, without incurring heavy costs. Or that was the theory of "small claims courts."

[Since writing this essay, I have become so used to the majisterial pronouncements of Judge Judy that it is hard to believe anything wrong about them.]

In my second letter to the Wakeham report, an awareness, that court procedure was not always for the best, formed part of a case for constitutional reform.

Here, I wish to warn the ordinary citizen of possible pit-falls to being ones own civil lawyer, say, in seeking recompense for faulty goods or poor service, of the kind brought up on the consumer watch-dog television and radio call-in programs.

The Daily Mail ran two online computer issues on the subject of: Does anyone care about the poor customer? The press depends on lavish advertising by chain retailers, who may have been investigated, more than once, as a monopoly. So, this verdict, after a flood of consumer sob stories, was not idle.

Supposing one, whom the gods would destroy, is mad enough to risk taking a claim to court. There are several things to consider before one begins. Firstly, is ones claim just? Was the person or firm, one is making a claim against, given a proper chance to make redress or compensate one or make reasonable amends? Does ones grievance really demand the drastic step of going to court? In general, has one got a good conscience about ones business dealings? Has oneself been fair in ones dealings with the defendant, one is claiming against?

To test ones claim, one can seek an appointment with the Citizens Advice Bureau. If they are not impressed, a judge or arbiter is unlikely to be. You may also learn, there, what law to plead with. In the first instance, advice may be about getting the firm to act on your complaint without necessarily having to go to court. Other help may get you to marshall your arguments, making them forceful and to the point.

(Much to the advisers displeasure, the courts may try to use them as unpaid lawyers for the citizen claimant, facing the professionals in the small claims court.)

Is there a law that unambiguously says claimants, or plaintiffs, are within their rights, say, to return sub-standard goods or have a refund for bad service? If you are taking on some big multiple firm, they will have a department of lawyers, just to cope with people like you. You have to give them proper notice that if they don't give customer satisfaction, then you may take legal action.

They may not settle. Their reply may state the relevant Act of Parliament that covers your case. This may be a consumer protection act. But you don't take their word for it. Remember, your opponents lawyers are the professionals and know all the tricks. You are the amateur, whose first time mistakes can and will doom your

case. Instead, you've contacted the Trading Standards Officer. After you've explained your complaint, he may tell you, even before you ask, the exact act upon which your affidavit or formal complaint must be based.

You may find that the most relevant act is an amended version, more strongly in your favor than the original act. So, in this instance, you would follow the trading standards officers advice of submitting your affidavit under a given consumer protection act *as amended*. This amendment might involve giving the customer a longer time to return faulty goods, whose state is not apparent at first.

Of course, your big corporate opponent knows all about this. As a matter of course, any complaints you make back to their store may be met with frustration and delay. The longer you can be kept with the product, you are unhappy with, the more your consumer rights are eroded. The worse the service, the less strong your legal position to claim redress.

The firms staff may be nice enough people but, as just one more customer, you may be fair game in the battle to maintain their turn-over, profits and jobs, to earn the living we all seek.

Perhaps one of the worst mistakes of the amateur lawyer is to assume that all you have to do is present all your arguments and the judge will see you have an over-whelming case. More likely, he will be over-whelmed by all the verbiage and miss the most important points, in his decision, when it is too late to correct him.

Judges have mountains of evidence to traverse in their jobs and cannot be expected to remember everything about your little grievance. You have to guide the judge on the best trail thru your case, so he doesn't lose his way to your main points.

The lesser points can be appended to your main statement, in case

they are needed to answer questions put by the judge or defending lawyer.

Costs awaiting the small claimant.

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Having searched ones conscience whether one is really in the right, just as crucial is whether one has the evidence to prove it. If one cannot make a convincing case, there is no point in wasting ones money prosecuting it. Don't be beguiled by small claims court leaflets saying one doesn't need the kind of cast-iron case required for a full court of law.

More to the point, the leaflets insist that, for any technological product which fails to meet standards, the plaintiff or claimant will need an expert report made independently of ones own influence. It musn't be from family, friend or employee. This is expensive. In the late 1990s, you would have to pay a computer expert £40 per hour for the report. A richly paid English judge may think you should have had him on hand in court -- still at £40 per hour. If you wanted a lawyer to handle your case, that was then £80 per hour.

You will pay the going rate, anyway, for hiring the judge. If you lose the case, that fee is forfeit. In answering your summons to court, the firms lawyer may ask the judge for compensation of *at least* that amount, at the claimants expense.

Well might you say: I thought this was supposed to be a small claims court!

That is not the end of the expenses, the small claimant may be up against. There is no rule that the big firm may not bring its own

employed expert witness. There really does seem to be one law for the little man and another for big business. A few firms so dominate the market, it hardly seems worth going to another ones expert staff. None of them are likely to side with the public.

The claimant may consult a small independent business for expert advice but it is not in their interest to go against the giants of their industry. Even so, before the case comes to court, the defendant may try to dissuade the claimant from seeking independent advice, expecting the customer to trust their own qualified employee. And that, despite the fact that the law denies the dissatisfied customer any use of dependants or associates for expert advice. It is like a battle of wills, in which the defendants try to take over your case and conduct it, on their own terms.

The firm also sends its own lawyer, who asks the judge that travel expenses of up to several hundred pounds also be awardable to his firm against the claimant. Presumably, the courts know that if claimants had to pay these travel expenses to go to the firms local court, most people far from London, or wherever, would waive their statutory rights. The courts would lose much business and justice would be seen not to be done but to be localised.

The defendant firm may even use your case as a chance to run in a trainee lawyer, scribbling down the proceedings, as if his livelihood depended on it. That is three against one in the court room and your opponent is a provider of employment to the system you are being adjudicated under. The firms lawyers are one of them, as far as the profession of judges is concerned. Moreover, the firms expert is another professional, whose opinion might well also be deemed of more weight than the amateur claimant.

In all probability, the judge admittedly knows nothing about the technicalities of a given case. He readily turns to the only expert on

hand, that of the defending firm, which may have been the way they wanted things all along. It may be that the claimants mass of evidence simply does not weigh, in the judges mind, against expert testimony. However much the defendants expert may stand on his dignity, the claimants case becomes only as good as his opponents technical witness allows it to be. Like a politician, he has to decide whether or not it is prudent to buck his firms party line, at all. What claimant would wish to so put himself at the mercy of his opponents?

We live in a culture of professionalism. The small claims court is an experimental intrusion of amateurs, which judges may not think much of. Law and technology, in their ways, are highly qualified occupations. He may feel that the man in the street gets no more than he deserves for intruding into the preserve of specialists. The amateur may be regarded automatically as "no better than he should be."

We come to the crux of why amateur claims may not work or be allowed to work. It reminds of local interest groups or communities trying to fight the decisions of their local authority to welcome some outside "developer" and their mega-bucks, like the post-colonialism of some multi-national corporation draining third world countries of their resources. Supposedly independent arbitration only seems, to the locals, to rubber-stamp the official case. Such arbitration is like being delivered into the hands of ones enemies.

The claimant only wanted to return his purchase and get his money back, or claim a refund from a service that failed to deliver its promises. But his little contest seems to imply much more. It becomes an indictment of the claimant. He is cross-examined by the defending lawyer and occasionally by the judge.

If he answered all the questions, he may still find to his surprise and chagrin that a judges written verdict slights his evidence, and even his character, over a matter that could have been simply cleared up, were there any opportunity to do so. Some more tact may be required of a judge, here.

This is an issue distinct from the question of lodging an appeal against the judges decision. The sums involved in a small claim don't justify re-trial.

Open source software.

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While the whole point of the courts is that two contending parties agree to defer to a judge or arbiters decision, the judge may defer to the authority of the large firms expert. For instance, a computer firm lays down the law that it will only refund or replace sold items that have hardware faults but not if they only have software faults or "problems" -- they tend not to use words like "faults."

There is nothing in English consumer law to justify this distinction. A fault is a fault. Yet the judge can over-rule statute law and may go along with computer firm law. After all, they are the experts, aren't they?

Indeed they are. And judge and novice computer buyer don't know anything to contradict them. But it turns out that software "problems," to use the euphemism, may not be so straight-forward. Apparently, one reason is, in a phrase, closed source software.

Anyone who has built a web site knows that to change the look of it, you have to view its source page. But you cannot do that with the

almost universal Microsoft Windows Operating System. Its source is closed.

In general, computer programmers had best be able to see the source of the software, its actual logical structure, to debug it. At any rate, the actual writer of a program is in the best position to put it right. It turns out that computer specialists may not find correcting software programs a routine job. They are liable to charge you a couple of hours just to look at it, all at full rates, without promising results afterwards.

A joke about why hackers, under false pretences, obtained Microsoft source codes is that Windows has so many bugs in it, they were driven to desperate measures to put them right. At one point, the Microsoft corporation was reported -- by *The Guardian* -- as saying that Linux was (their) public enemy number one. Its code author jokingly talks about "world domination."

Linux is an open source operating system. Don't ask me more. Obviously, I aren't a programmer. But I haven't the slightest doubt that the future is with open source. Tho, at the time of writing, even Linux seems not yet user-friendly enough to become the norm for unskilled home users.

If they were wise, Microsoft would make their Windows Operating System into open software, while they're still ahead. Otherwise, we have the same old story of the supposed advantage of an imposed uniform standard over the creative freedom to modify.

[PS: Soon after this essay was written, Microsoft began to share their source code with trusted partners in government and business. But it's still generally closed source, which caused problems for electronic self-publishers, when they tried to convert their book from the word processor program, Microsoft Word to e-book format. I

used the open source html editor, Amaya, for my web-site and later, as a near approach to e-book coding requirements.

Electronic self-publishing is one of the great advances of amateurs into a virtually inaccessible profession.]

The conflict may be compared with the dead hand of convention that rests on English spelling, in all its aberrations, which leave so many illiterate.

Similarly, the availability of open source operating systems or other programs would allow people to learn better how they work. Rather than treating computer programs as magic, more people would become accustomed to see their logic. Program-literacy would be stimulated.

The moral, once again, is the need to spread important skills, like advocacy or programming, thru-out society. The spread of literacy made writers less of an exclusive profession. Technological advances are likely to repeat this creative enfranchisement in the visual and musical arts. The same needs to be done, in essentials, for all the professional skills that largely affect society.

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"How the banks robbed the world."

The 2000-02 Dotcom bubble.

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New York Stock Exchange, late 19th century.

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***Weird Nature* and *Horizon* on Easter Island.**

The 9 January 2003 was an evening for moralists on BBC2. *Weird Nature* showed how ingeniously life adapts to its environment. Man, too, is amongst the most unique adaptors. Popular biology used to burst with pride at the thought of mans opposable thumb and its brain-stimulating dexterity. Human forelimbs were freed, for this purpose, by uprightness -- physical uprightness, that is. (Subsequent programs, that night, were to cast doubt on the moral uprightness.) This is exceptional, except perhaps from a species of mangrove swamp monkeys that have learned to walk in the water, if not walk on water. Some think that deep wading is how man learnt the trick of his "funny walk."

The next BBC2 show was a new serving of Easter Island, from the *Horizon* science series. The series shows how scientists go about their work. I don't describe that here, just mentioning a few findings of this program. The main observation was how the islanders mass produced stone statues, and were able to transport them around the island, incidentally committing ecological mass suicide, by cutting down all the trees and losing the soil.

A moral, there, for this island earth and the *in*adaptible weird nature of man.

Easter Island was the worlds largest bird colony, which disappeared upon the trial of mans arrival, as did the surrounding abundance of edible sea life.

Ethologists, like Tinbergen, showed, in trials on birds, in preference to their own eggs, the greater stimulus of over-size egg mock-ups to brood on. The natural behavior of some birds seems to have gone on from egg-rolling to stone-rolling.

Human idol worship may be less big-brained than bird-brained.

Indeed, it is evident that the islanders did have a giantist fetish, carving bigger and bigger statues.

Maybe, the more man believes he is a religious spirit, removed from the influence of the environment, the more he is obeying the stimulus of some primitive instinct, that may not be adaptive in the circumstances.

When man finds himself on a longer environmental tether than other animals, he often uses the extra rope, he has been given, to hang himself with.

Over-confidence, in the godly protection of the statues, is suggested by the fact that these "living ancestors" in stone were turned upon, many being toppled, when the population was reduced to starvation.

The later cult of a "bird-man" suggests a more humble worship of man's integral part of nature. This cult was a ritual competition which replaced war-fares destruction with an orderly food distribution.

By the way, religions need not be always heedless of the good of the world. May-be the belief in re-incarnation, not only held by Indians, is more environmentally friendly than some scientists or positivists naive religion of there being "nothing" after death of the body and its senses. This "nothing" is akin to a sort of nirvana or independence from wordly attachments, that some spiritual teaching holds only to be achieved by much moral trial and error, even thru many life-times.

The islanders, isolated for a millenium, were as shocked by three ships, as the Earth would be, by visiting space-ships. By the time the Dutch arrived on Easter day in 1722, the natives had saved themselves, only to be almost exterminated by Western disease and slavery and more disease.

The scientists on *Horizon* pointed out the parable of Easter Island for the modern world, as relentlessly destroying its irreplaceable natural resources, disrupting and threatening a collapse of the global eco-system.

Cue BBC2 program three, that evenings viewing, with the curiously forth-right title of "How the banks robbed the world."

"How the banks robbed the world."

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The following account is indebted to the BBC2 program, titled above. (Their web-site is: www.bbc.co.uk/business) People, including myself, are so ignorant of "high finance" that I hope the program-makers won't mind this abridged re-telling of their research. My Democracy Science web-site, and the e-book series that comes from it, is largely about the democratic alternative to the force and fraud in political economy, that the following story of the banks scandal exemplifies.

Clinton became President with the populist policy of limiting executives pay to one million dollars a year. So, the practise grew of giving company bosses stock options, at a set price no matter what the market price. They could get huge profits by pushing up the stock price of their firms.

This looked like a capitalist incentive for those running the firm to make it thrive. But it didn't work out that way. The BBC2 program traced events in a series of five "scams."

Scam one: secret loans.

The system of share options tempted executives to cook the books to make money. Profits were inflated by including predicted profits. That didn't bring in cash. But the banks were eager to help in side-stepping the accounting rules and tax rules. The apparent attitude was: "Give me a rule and I'll work around it."

Citibank funneled \$125m cash into a secret off-shore bank. "Delta Energy" then pretended to buy gas from Enron. Enron claimed this cash as income in its accounts. Enron shareholders were deceived. By another fake deal, Citibank got its money back plus interest. This sham transaction was the first of many such secret loans. The share price rose; the executives won again.

According to Robert Roach, Chief Investigator, Senate Subcommittee on Investigations: Enron could not have engaged in the deceptions, it did, without the full knowledge and full assistance of the financial institutions.

They provided the means and the funding and were as much as anyone to blame.

Scam two: kick-backs.

Because WorldCom was buying up so many companies, the banks had a lot of lucrative deals to fight over. Some were so greedy, they dreamt-up a second scam: kick-backs.

A Citibank subsidiary, Salomon launched a new share flotation. Most were disappointed of the expected profits from this so-called Initial

Public Offering. But for an executive making \$2m profit, it was almost like giving him cash.

Salomon was rewarded by the handling of a record-breaking \$37bn take-over, making WorldCom the worlds second telecom company. They boasted of perhaps taking over British Telecom, the defeated bidder.

For starters, a Securities lawyer is suing Salomon over such IPOs as amounting to bribery.

Scam three: the "Pied Piper" financial adviser.

Financial analysts are supposed to give unbiased advice to the public, and not be compromised by interests, the public are unaware of, as was the case. Banks could employ an analyst, whose pay was linked explicitly to the value of the banking deals he brought in. The BBC2 program gave a snippet of how the "Pied Piper" financial adviser made out anyone would be dumb beyond consideration not to buy into WorldCom.

It was stated that wherever he went, banking clients would follow with multi-million dollar deals. With his support, the WorldCom share price quadrupled over three years.

Another financial advisor, who refused to write rosy reports about Enron, was gotten sacked from two Wall Street firms. A favorable analyst replaced him.

Scam four: shell companies.

Citibank shoveled nearly \$4bn into Enron in secret loans dressed up as deals. This was still not enough to cover-up Enron debts. So, a complex of secret companies was set-up as an accounting manouvre to hide debts and create very controversial earnings. It took a professor of economics to sort out the tangle between some 4,300 such "boxes." Not one appeared to match a real business purpose.

Merrill Lynch had the lucrative job of raising finance for one of the key shell companies, designed to hide Enron debts. Half Wall Street was invited and told the purpose of the company was to buy up Enron businesses not making enough money and under-mining the share price.

They were promised such fabulous rates of return that many of the bankers invested millions personally. The investors presence was being bought. Because of the scam, Enron claimed profits of \$1bn, when there were in fact none. The chief of Enron had \$180m in share options.

The WorldCom chief had \$325m in share options with his company boasting profits of \$2½bn. Yet "incredibly" he still needed cash. Citigroup gave him a nearly \$500m dollars personal loan to help buy thousands of acres of American forest. This should have been disclosed to World Com shareholders, with respect to the law on Securities Fraud.

Within six months, Citigroup was chosen to under-write a \$4bn WorldCom bond issue. Citigroup made \$15m on the deal. A year later, it happened again.

Scam five: ignoring costs.

In march 2000, the Stock Market collapsed. The "Pied Piper" changed his analysis to one of revenues, instead of profits, ignoring costs altogether.

Costs went out of control as prices fell. WorldCom executives began to record day to day costs as spending on assets, to account for them as long-term spending, and so boost short-term profits. This mis-accounted \$9bn.

Executives were secretly selling stock and the Pied Piper was still urging the buying of shares even as they were collapsing.

Scam six: the three-shell game.

The BBC2 program doesn't name this as a sixth scam but I am still closely following their account. The three-shell game is a fair-ground attraction where the public has to guess under which of three shells a nut has been put. The game promoter tries to deceive by sleight of hand and win the bet.

When the public were shown an investment version of the three-shell game, they were deceived even from knowing they were being drawn into a game of deceit. Citibank set up a new company called Yosemite to persuade out-side investors to lend cash to Enron. This time, Enron used the cash to pay off debts to Citibank. So, the public and not Citibank would lose money when Enron collapsed.

The BBC2 program showed a man playing the three-shell game, with three shells, labeled Yosemite, Enron and Citibank, hiding the publics bank-roll.

Scam seven: letting the banks off lightly.

I've called the lenient treatment of the offending banks a seventh scam.

The shell companies accountants apparently became too clever for their own good. The economics professor pointed out that they failed to make one box own 3% of another box, as it should have. Hence, a legal demand was made that two boxes be combined, resulting in a \$1.2bn reduction in stock-holder equity.

This was "the first step in the avalanche" that led to investigations, stock price collapse and bankruptcy. Enron borrowed billions but couldn't save itself.

Other company accounting scandals were exposed. It seemed everybody had been at it. The biggest falls came from where executives were given the biggest options.

They remind of the birds preferring to roost on "eggs" the size of an American foot-ball, or the Easter Islanders, destroying their environment, to build bigger and bigger statues.

The belief that "greed is good" worked its ruin on the Stock Market.

A largely corporate-staffed administration was obliged to promise a corporate clean-up. President George W Bush is regarded, by a blue-collar representative like Michael Moore, as the front man for corporate America. The President said on 9 July 2002: The business pages of American newspapers should not read like a scandal sheet.

Hauled before Congress, WorldCom executives took the fifth amendment. Some WorldCom and Enron executives have been arrested for trial. A case is under-way with regard to the biggest fish. But the boss of Citibank won't face charges. Their disbarred analyst,

"the Pied Piper" has been discharged from their employ with what amounts to a scores-of-millions dollar sweetener.

The New York Attorney General is credited with some of the toughest banking reforms since the nineteen-thirties. Wall Street is barred from bribing company bosses with share issues. New rules are meant to ensure the independence of analysts.

The chief investigator believed the abuses, of any number of rules, will go on, while financiers lack a moral compass.

The banks have been fined: Merrill Lynch \$100m, CSFB \$150m. The rest have also settled. The biggest fine of \$300m was to Citibank. Americas biggest financial services company can afford it. In the current year, they will make \$16bn profit.

The BBC2 program says Citigroup did the most to help WorldCom and Enron deceive the world. Its boss had most to gain with an options package of almost \$1bn.

2002 was the year the depths of Wall Street corruption was finally exposed. Only because of the big financial houses could WorldCom and Enron destroy \$240 bn of investors money.

Sarah Teslik, of the Council of Institutional Investors, concluded: The people who can least afford to lose money have lost collectively billions of dollars -- because of fraud, because of greed -- that has been transfered out of their pay checks and out of their pensions to the pockets both of the corrupt executives and the Wall Street investment bankers who enabled them.

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David Craig and Matthew Elliott: Fleeced!

**How we've been betrayed by the politicians, bureaucrats and bankers and how much they've cost us.
£50,000 taken from every person in Britain.**

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November 2003, Deputy leader, Liberal Democrats, Vince Cable:

The growth of the British economy is sustained by consumer spending pinned against record levels of personal debt, which is secured, if at all, against house prices which the Bank of England describes as well above equilibrium level. What action will the Chancellor take on the problem of consumer debt?

Chancellor Gordon Brown: We have been right about the prospects for growth in the British economy and the right honourable gentleman has been wrong.



A is for Austerity after the Avalanche of bad debt.

The headline estimate of £50,000 debt imposed per man, woman and child is perhaps a severe under-estimate of the bank robbery of Britain. The authors, estimate, cited below, is about three trillion

debt. But the Mail on Sunday supplement put it at nearer five trillion, with an obscene graphic in mountains of squandered bank notes. (And that's only what's come to light.)

You may have despaired, as I have, of ever keeping track of the serial mismanagement of Britain. There is a positive advantage in numbing the public with one disaster after another, so that the last is over-shadowed by the latest. When much of the populations computerised confidential banking details went missing, the new premier Gordon Brown assured us it would soon be forgotten. And so it would have been, with all the rest of the blunders, if he hadn't been so dismissive of this particular one.

This 2009 book, *Fleeced!*, follows several titles, by these writers, sometimes with other co-authors, on the epic of inefficient spending by New Labour, since 1997. It isn't all that partisan. One of the laughs is a wry rant on trying to lead a Tory horse to drink.

One of the authors advised the Tories to have a policy of ring-fencing vital services, while cutting out the layers of managerial fat. David Craig emphasised they must never say something like: we will ring-fence health or education, implying that the bureaucratic waste would be spared. But sure enough, that was just what they soon came out with.

In fact, I've just seen written in the standard David-Cameron commandeered side of the local Tory leaflet for the 2010 general election: "We will protect spending on the NHS and improve it for everyone."

With the authors, thru-out, you have to laugh that you might not cry.

Reviews of these books, like: *Squandered*; *Plundering the Public Sector*; *Rip-off!*, have called them "terrifying," "horrifying," "shocking,"

etc. We should be grateful that there are journalist accountants with a dogged determination to hold government accountable.

A really terrifying, horrifying, shocking fact is, tho, that Labour and Tory parties are only beginning to do their worst to this country, in their commitment to more nuclear power stations. Sixty years of fission energy provides evidence enough that scientists and technologists, and their political masters, can be as ignorant and impractical as anyone towards human survival and prosperity. If The Taxpayers Alliance, which Elliott heads, cannot see that, their worthy work is all but in vain.

[This review was written about a year before the enforced Japanese evacuations from the contaminated land around the disabled Fukushima nuclear plants.]

Craig and Elliott say: In New Labours decade of tax and spend, over a trillion more was spent than under Tory government levels.

We should remind ourselves a little of what went before. As I heard someone say at the time of the Tories: This government doesn't want you to have anything for nothing.

Worse still, the poll tax - taxing you just because you exist, as one Labour MP put it.

One would think from the authors that all Labour spending was bad. In fairness, I would have to say this was not entirely true. A highly visible example is spending on public libraries. If our local central library was anything to go by, the Tories starved it of funds over many years. The stock was getting ever more dated, gaps in the shelves, hardly any new books.

I did find some of Labour public library spending wasteful and inefficient. Replacing every library, in a standard county way, was not to the advantage of every library. Our central library was austere and utilitarian pre-war, it is true. Personally, I preferred that to the luxury refurbishing. And the big oak bookcases were replaced by much smaller, from shoulder-high to crouch-yourself shelves. This further reduced book capacity, as did the room taken-up for computers.

These are relatively small matters but typical of government that all such decisions go on above the heads of the local people who use the services.

Nevertheless, I find it hard to believe that the Tories would have brought the libraries into the electronic age. Not nearly as readily as Labour did. Tory privatisation dogma was turning people away from the public library service by their neglect, perhaps as a pretext to roll it up altogether as out-dated. I doubt the Tories would have allowed any free access to the web. It has since been reduced and curtailed to minimal levels.

Labour purpose-built modern clinics, like decentralised mini-hospitals, to replace the stuffy little waiting room for the GPs office, typically in some housing terrace.

A private-public conflict is a line of divide and rule by which the Labour-Tory duopoly persist in cornering power for themselves. As this book shows, Labour has built-up an army of largely dubious dependents in the public sector. The 2010 Labour election slogan of resisting Tory cuts seems to be an appeal to this bought support.

New Labour politicians were caught, by Greg Palast, in "lobbygate" stings, trying to sell themselves. So, it would not be surprising if mercenary politicians treated voters as mercenaries.

Moreover, the meddlesome control-and-fine inspectorate reads like a government turning Prussian rather than democratic. And this perhaps in Tory-controlled council areas, so that it, in effect, becomes Labour-Tory duopoly policy.

We hear a lot of ambiguous cant against "neo-liberalism" but Labour became "neo-Prussian."

It is fair to say that, unlike *Fleeced!*, the Press, unavailingly gave vent to chronic rage, against private firms uncontrolled increases in excessive executive salaries. public sector emulators.

The authors forget how sustained were Fat-Cat attacks by the Press, when they criticise the Westminster journalists lobby for being managed by the government, feeding them scoops, so they would over-look public spending failures. After all, private sector greed has been emulated, if not matched, by the excessive public sector salaries.

The anxiety of Tony Blair, becoming PM, as well as Peter Mandelson, to encourage people (including himself) to become rich, encouraged corporate plunder. Inequality, not wealth creation, has been his legacy, in the private and the public sector. Of course, the authors are right to pick on the bankers as becoming pre-eminent instruments of inequality and injustice from the private sector.

The first time the financial market lost more than half its value was the great Crash of 1929 to 1930. But in the last 35 years, there have been three more: 1973-4 with the oil price hike; 2000-02 the dotcom bubble; 2008-9 the credit crunch.

After 2000-02 Dotcom bubble burst, money fled shares into housing, which pushed up prices and encouraged borrowing.

House prices boomed in USA and UK, Spain and Ireland.

Government encouraged home ownership and relaxed credit rules.

Inflation in house prices, left out of the governments calculation, contributed to artificially low interest rates. Prices fell from increased industrial production in Asia. Low interest rates encouraged financial institutions into riskier investments, all essentially the same but generating huge fees. Doubts about their real value led to crisis.

Another illusive growth was in Britains public sector to over 6 million. About 5 million have final salary pensions, double that of the private sector, which is closing them down to new employees. Originally part of Tory privatising ideology, from the eighties, much of pensions mis-selling was encouraging to switch out of final salary schemes into risky investments or those likely to perform more poorly.

Companies selling out to pension-management companies creates a conflict of interest in the managers desire to maximise their own profits rather than the pensioners. Almost all pension savings tax benefits eaten-up by charges.

A citizen would need £50,000 a year for their whole working life to earn an equivalent pension to an MP. Raising their pay to £100,000 per annum (p.a.), since they've been found-out on expenses, would likewise increase their pensions.

The most generous benefits system in the world encouraged uncontrolled immigration from all over the world. At the other extreme, of the world immigration scale to Britain, are countries that shoot, on sight, border crossers.

Meanwhile, Britains manufacturing, to pay for it all, declined, about 15% under New Labour, unlike China, India, Germany and Holland.

In the bust, approaching half a trillion pounds were wiped-out in UK shares. Another half a trillion pounds or more are to be found for public sector pensions. Then there's the estimated tax-payers loss of at least £200 billion from the banks bail-out.

All in all a boom and bust loss of over 3 trillion, it will take decades to pay.

[PS: This turned-out to be an under-estimate.]

The worlds financial instruments are valued at many times that of national economies, especially since George Soros made a billion pounds, in one day, by helping Britain crash out of the European exchange rate mechanism in 1992.

New Labour gave honors to at least 23 bankers, including 7 life peerages; 3 as government ministers. And asked another 37 to work on commissions, quangos and advisory bodies. At one point, 3 financiers, worth £500 million, gave nearly 40% of their party donations.

With too much money to be made out of the financial bubble, credit ratings made investments look rosy. Finance is getting more complex and less transparent, including insurance against risky loans, such as mortgages that couldn't be paid; over-selling and over-borrowing; the spreading of potential defaults thru the financial system.

Banks, with worthless investments, start collapsing. Confidence flees causing a chain reaction. Regulations for more capital adequacy, after allowing too little, over-compensated, inadvertantly leading to the credit crunch.

"What Gordon didn't tell you": while using public money to stave off the banks collapse, the claim, this is to encourage bank lending, ignores that the state is also telling the banks to build up their capital against their enormous losses and pay into a fund against further bank runs. Hence the woefully poor interest offered for savers, so their prudence is fleeced thru inflation. And good businesses are

starved of the credit they need to keep going. Vince Cable kept hearing of this, thru his constituency MP work.

Shares leak value because insiders get the best from knowing when to buy and sell at crucial upturns and down-turns of the market prices. Correspondingly, the public may be the losers. Fees and commissions accumulate into hefty cuts out of the eventual returns. The public may not know the nature of the products, they are being sold or mis-sold on pretence they are secure. The executives get massive bonuses no matter how badly their companies perform.

Pensions liabilities of many companies are larger than their market value. Risks are being placed on the employees. Government can only pay for inflation-proofed public sector pension liabilities by charging the taxpayers. About 34,000 public sector pensions millionaires may double or even triple from New Labour extras.

B is for Bureaucracy and Bad government.

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Over half a million civil and public servants, with signs of steady increase, despite government protestations.

They are often transfered to quangos, whose number of employees rose from a million in 1998 to one and a half million by 2006. Spending up from £49 billion to £130 billion. Yet, powers transfered to regions and to EU. Regional Development Agencies were duplications of English Partnerships over regeneration. Many overlapping agencies, against disadvantage, under the Department for Communities and Local Government.

Constant disturbing reshuffling of segments of departments made them look smaller on paper, as with the Cabinet Office. Constant abolishing and refashioning of ministries dislocates effective government.

Number of NHS managers doubled since 1997, despite 30% decrease in beds. Brussels laws doubled from 40% to 80% in ten years. Two-thirds reduction in proportion of laws matched by two-thirds increase in MPs salaries and expenses. New public sector managerial class created, one for every two administrative staff, checking targets, ticking boxes, writing reports, attending luxurious conferences, spreading best practise, instead of practising it, and not wasting actual workers time with initiatives, to make themselves look active and improve only their own financial well-being.

The attempt to cut staff, with by-product of a redundancy bonanza, defeated, while hiring more people. An army of consultants cost £2.8 billion a year.

Public Accounts Committee member called the efficiency savings "an enormous amount of smoke and mirrors in the whole of the public service."

(Reviewer comment: unelected and unaccountable officialdom doesn't work. It's time for representative democracy of all vocations and occupations, so that they can keep a check on themselves and each other.)

The civil service answer was that savings had been made regardless of the costs of making them, often more expensive than the savings.

The PAC said such answers could have come out of the satire: "Yes, Minister."

Pay for front line services kept under control. (Only be a matter of time before driven to disruptive but ineffective strikes.) But top ten civil servants earn over £200,000 pa. Top ten quangocrats earn from one and one-quarter million pounds to three-quarter million pounds. British Nuclear Fuels include two of them. Over 60 earn more than top civil servants and at least 169 earn more than PM.

BBC top salaries from over £800,000 to £400,000. BBC bidding-up for sports sometimes artificially increases costs. Their charter is not to compete with commercial broadcasting but supply other service.

Organisation for Economic Co-operation and Development. (OECD) showed Britains public spending on the scale of nations, from 1997 at 17, by 2007 to 11, if not higher after. Education: reading fell from place 7 to 17; maths 8 to 24; science 4 to 14, from 2000, before tens of billions thrown at it, by 2006.

But Britain is high on crime tables and proportion of unskilled work force.

Despite more than doubling health spending from £45 billion to £105 billion a year, survival rates for cancer and strokes should be about 17,000 less, going by comparable European countries. ("Wasting Lives." Taxpayers Alliance.)

NHS website admits 34,000 die unnecessarily and 25,000 a year needlessly disabled in hospitals each year. Money squandered on new managerial class with no health-care training, living in their own world of target-setting and form-filling. Managers doubled from 20,000 to 40,000 from 1997 to 2009, costing over £3 billion a year more. Plus £600 million a year on management consultants to show the managers how to manage. There's 5000 more managers than medical consultants. Directors of finance, marketing, strategy,

communication have lavish pay and pensions. It's Parkinsons law with a vengeance.

"Achievements" might be doing more harm than good, as ritual of meeting targets can be fatal, just to make the figures look good. No patient has to wait more than 4 hours in Accident and Emergency. But it's claimed some patients held back and dying in ambulances rather than break the 4 hour dead-line.

Hospital buildings, under the governments inordinately expensive and failing Private Finance Initiatives, cost over £10 billion.

The national health service ethic is replaced by a "managerial cover-up culture" reminiscent of the Bhopal and Exxon Valdez disasters. Margaret Haywood, whistle-blower against denial of basic care, was struck-off by Nursing and Midwifery Council in 2009. All the nurses in a hospital with high mortality were afraid to take part in a tv under-cover documentary.

This contrasts the pay and pensions boosts to one suspended on lavish salary, a chief executive of a hospital, criticised by the Healthcare Commission, finding anywhere from 400 to 1200 needless hospital deaths with shocking and appalling care: "hundreds of patients died because the trust's board was more interested in meeting government targets and attaining elite foundation status than in patient care."

Most government ministers have no experience of management in general or of what their departments do in particular. Most of them have never learned that money has to be earned before it can be spent. Typicly, politicians are lawyers, lecturers, trade union representatives, or political advisers straight from university. They are versed in a protective layer of management-speak or gobbledygook.

European Central Bank study estimated if UK public services were as efficient as in USA, Australia, Luxembourg, Ireland, Japan, Switzerland, there would be the same level of service for about 15% less cost. A trillion pounds wasted and probably another trillion to be wasted, before it can be brought back under control, if ever.

Instead of a positive feedback from wise investment, a negative feedback of wasted money, rising social breakdown, millions of unskilled who've never worked, rising benefit costs, increased taxes, reduced competitiveness, falling wealth, greater borrowing, higher taxes, greater burdens on households and businesses. The real costs of waste are almost unimaginable.

Prestige projects for politicians spend public money of no value to public: political or profiteering gimmicks. Pretence of low cost results in over-spending that suppliers can get away with, because of administration attitude that it's only public money, and inexperience in auditing. Most civil servants and politicians move on from financial disasters and would rather avoid the blame than face-up to the failure.

Regular ritual, of Public Accounts Committee calling evasive civil servants, is to vent histrionic outrage. Serial poor value projects are usually described as the "worst" this or that.

The millenium dome only came 9th on cost-overruns. The 2012 Olympics and the NHS IT system by far the worst wastes. The Olympics involved building many facilities already well provided for. At least ten of the Olympic managers won gold by earning more than the PM.

In Plundering the Public Sector, the authors "explained in possibly painful detail exactly what was wrong with the whole [NHS IT] project; why it would cost billions more than budgeted; why it would

be at least ten years late; why it would never work; and why it wasn't ever necessary in the first place."

The project boss left - apparently to Australia, as far as possible away without leaving the planet.

Two of the four suppliers couldn't be induced, by all the billions, to have anything further to do with this highway to hell. It still doesn't work and many hospitals won't touch it. The money is still being wasted. They've started, so they will go-on regardless of cost or value. No-one has courage to pull the plug, lest government lose face, tho the NHS would benefit from the transfer of spending.

The governments reflex response to any problem is to set up an independent committee or watch-dog. In 2008, ten of the largest, set up since 1997, cost almost £1 billion. With expanding budgets and staff.

The utility bills go up steeply, nevertheless. Ofgem and Ofwat fail to protect: foreign energy and water companies earn four to five times the profits in Britain compared to their properly regulated home markets.

Qualifications authority spent over £1 billion, while exam results so discredited, that university admissions departments no longer recognise them as valid.

Regulatory capture, with poachers, become game-keepers, over-see businesses such as oil, tobacco, nuclear power, pharmaceuticals. This is now a problem in public sector, such as health care and financial services.

In 2001, the National Patient Safety Agency has 292 staff, £30 million p.a. budget. After spending well over £100 million, it still didn't know, by 2006, how many patients harmed by medical error. The

Public Accounts Committee (PAC) said: the NPSA is "dysfunctional" and "not value for money." The NPSA is one of several budget-busting regulators, some re-organised.

The Health Protection Agency produced vast amounts of literature, including about hospital-acquired infections. Meanwhile, 30,000 deaths in Britain. Comparable rate, had these victims been in countries like Belgium, Denmark and Sweden, would have been less than 600.

In 1997, Labour manifesto promised to cut administration to strengthen front line. Instead, £450 million p.a. more for regulators.

Gordon Browns tripartite system of financial regulation didn't give clear line of command and responsibility to one organisation in a crisis. The Bank of England was given the wrong target of monitoring the Consumer Price Index instead of the Retail Price Index, thus living in a fools paradise that inflation was only about 2% p.a. while no regulators noticed the unsustainable house inflation bubble.

The Financial Services Authority had over-seen selling of financial products, like savings, pensions, investments, unit trusts, mortgages, Ponzi schemes, etc. In any case, there was a whole series of mis-selling scandals, met by "FSA apathy," to quote the Press. Likewise, "Toothless FSA leaves us all at the mercy of the banks." Giving the FSA the job of macro-economic policy, the market stability of financial institutions, was not suited to its dubious skills.

In the crisis, a Bank of England excuse was that it was given the job of over-seeing the stability of the system, not individual institutions, the job of the FSA. (The Treasury designed the over-all structure of regulation.)

174 of the FSA staff received 6-figure salaries and practically everyone in the building got a record bonus during the crisis, when they actually had some real work to do. Government allowed it to take its budget from £300 million to £415 million p.a. They admitted they would pay more than necessary to recruit more staff.

As in the USA, former leading financiers influence regulatory advice.

After the 1929 crash, the Glass-Steagall Act separated high street saving and lending banking from high risk investment banking, to protect from financial gamblers being bailed out with public money when they lost, because they were too big to go down without taking the country with them.

The untouchable elites.

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Local, like national, government out-of-touch.

Joan Bakewell, given some authority, commented, on councils intending to cut pensioners free bus passes, that people had a right to expect some return on all the money they had paid in council taxes.

Councils doubled council tax, yet want more and say front-line services will have to be cut.

By 2007-8, 1021 people, in the 469 local authorities, were earning over £100,000 p.a. The ten highest receiving more than the PM. Not all councils complied with Freedom of Information over their pay.

Local government employees limited to 2% rise, while top officials average was 6% of a much bigger salary, amounting to £7328 p.a.

This also increases their pensions correspondingly. Many councils pay a recruitment company owned by the Society of Local Authority Chief Executives and Senior Managers.

Middle management earning over £50,000 p.a., went-up eleven times, under New Labour, to about 38,000 staff.

Since 1997, cost of managers wages and their accessories, such as offices, secretaries, assistants, expenses and pensions, probably multiplied tenfold (or more) from about £400 million to £4 billion p.a. Council tax amounts to £24 billion. Had managers only increased five-fold instead of eleven-fold, council tax could have been reduced 10%.

Councillors allowance increases regularly exceed by five to ten times, the rate of inflation. In 386 local authorities providing information, they pocket an average of £10,000 p.a. Being a member of a police authority can add £10,000 to £15,000 and of a fire authority £5000 to £10,000 p.a.

More than 3500 councillors have joined Local Government Pension Scheme, as if they were salaried employees enabled earn pension benefits, inflation-proofed with early retirement thrown in.

Management-speak has invaded local government adverts for frilly jobs, consultants. Foreign and domestic holidays come thru twinning towns and seminars.

Plundering Politicians.

The following unworthily small sample of MPs fiddles is mainly taken from "Fleeced!"

In July 2009, MPs awarded themselves a £25 a night subsistence allowance payable without receipts when staying away from their main home. This could net some thousands a year tax free over their mortgage, rent, food, utility bills and council tax allowances.

This was right after the May and June Daily Telegraph uncensored version of the redacted MPs expenses given by Parliament.

Gordon Brown was one who flipped his designated second home, shortly after entering Downing Street. David Cameron, who took out a £350 000 mortgage, for a large house in Oxfordshire, took close to maximum allowed.

Choice of second home was often influenced by which could give the £24,000 p.a. allowance. In seven years, Jacqui Smith MP perhaps cost £2 million in salaries and expenses.

Balls and Cooper switched to second home the residence from where their children went to school.

Claims, on mortgages already paid, raised questions of criminal offenses.

"Flipping" is when MPs change which is their main home, so they can claim for furnishing and contents. Gordon Brown, flipper, used his Westminster flat as his second home, despite having a Downing Street flat. After moving into Downing Street, he flipped to his house overlooking the Firth of Forth.

Alistair Darling changed his designated second home 4 times in 4 years.

Geoff Hoon, as former MEP, maybe had a head-start in the expenses stakes. He built up a property empire thru expenses; flipped 4 times in 4 years. Finally caught, in March 2010, in another lobbyist sting with other Labour ex-ministers Patricia Hewitt,

Stephen Byers, and another Labour MP, Margaret Moran.
[PS. Patricia Hewitt was among those cleared of impropriety.]

Moran is standing down after "a furore over her expenses." She is also the chairman of an all-party Parliamentary group on the information society "which - highly unusually - is registered as a company." (Mail on Sunday, 28 March 2010: MPs and peers run private company selling "influence over government policy"). Its corporate members pay more than £120,000 p.a. and fund expenses for junkets abroad.

Hazel Blears claimed for three properties and nights spent in a series of hotels in just one year.

John Bercow (Speaker) flipped twice in a year, both times avoiding capital gains tax from two house sales.

Kitty Ussher (Lab) flipped for a month during sale of property.

In five years, 27 outer-London MPs made claims averaging £63,000. But another 22, living similar distances, made no second-home claims.

Married MPs the Keens were known in Westminster as "Mr and Mrs Expenses".

Married Andrew Mackay and Julie Kirkbride, each designated a separate second home. This meant that, between them, they had no main home but two second homes. Kirkbrides sister employed as a secretary, tho living 125 miles away. Her brother allowed stay in constituency home, against Commons rules, as it was funded out of expenses.

Alan Duncan, gardening expenses claimant, had his new flower bed cut in shape of a £ sign. One of half a dozen Tory MPs submitted

gardening and grounds claims "in error" and repaid.

Barbara Follett claimed £25,000 on security guards as expenses. Why didn't she change Labour policy, if it is so ineffective?

Parliamentary Commissioner for Standards, John Lyon dismissed 93 out of 113 complaints and resolved one in a year.

His predecessor, Elizabeth Filkin led high profile investigations into Keith Vaz, John Major and William Hague. It seems, she was subject to a whispering campaign against her, and obliged to re-apply for her job.

The Sunday Times, January 2009, did a sting, of the House of Lords, showing some members willing to change legislation in exchange for lobbying fees.

Allowances amount to substantial incomes of £56,000 to £66,000 taken by some Lords. Some tabled no questions or almost none. One peer claimed over £40,000, tabled no questions, spoke 9 times and voted twice in a year. Others nearly as bad value.

Several peers have registered as their first homes their French homes to allow generous expenses for visiting London.

The appropriately named Lord Ryder claimed over £100,000 by claiming that a converted stables, in his parents country estate, was his main home.

The Sunlight Centre for Open Politics complained against Lord Rennard, former chief executive of Lib Dems on second home claims.

The Bank Robbers.

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Once again, labour - the impoverished working class in Britain's old industries, a large percentage of them miners - was being asked to bear the cost of capital's mistakes.

Historians would condemn the crisis of the summer of 1931 as "the bankers' ramp." The flight from sterling on 11 August was not precipitated by the budget deficit - the millions being paid out in unemployment benefit - but by the speculative activities of London's bankers.

...The London bankers were caught out, facing short-term foreign liabilities estimated at over £400 million.. It was the Bank of England's decision to allow them to draw on the gold reserve that had caused sterling to run down.

The upshot was a National Government and a National Emergency.

Black Diamonds, by Catherine Bailey, in 2007 (the year before the Credit Crunch).

In 2007, the bankers appeal, to government for a bail-out, involved a capital guarantee that could be far in excess of the national income.

The assets and thus liabilities of Iceland banks were about ten times their national earnings (GDP). In UK, about four and a half times.

In 2007, the Royal bank of Scotland had total liabilities £1.9 trillion; Barclays £1.2 trillion; Lloyds-TSB and HBOS each £1 trillion. In all,

UK GDP itself was just £1.4 trillion.

But the largest US banks, Bank of America, Morgan Chase, Citigroup, only had liabilities (in pounds) of about 1 trillion compared to US GDP of 14 trillion.

On just a few deals, RBS lost more than UK annual defense budget. In a few months from 2008-9, Barclays share price, which later recovered, lost more value than UK spending on police and criminal justice in a year.

Banks bailed-out, including RBS and Northern Rock, went on to give bosses and staff extravagant bonuses; also huge earnings and bonuses to bosses of Lloyds-TSB and Bradford & Bingley.

In april 2008, the FSA prevented institutional shareholders of the RBS voting against Sir Fred Goodwin, "Fred the shred," misguidedly fearing a mass rebellion, against the board, would rock the boat.

FSA claimed it was already looking into HBOS lending, a former HBOS head of Group Regulatory Risk, Mr Moore, warned against. The FSA did not explain how the bank still collapsed.

The government plays to the gallery, blustering about regulation to reduce risk, while fighting the European Union regulation proposals, they fear would reduce profits, to get the nationalised banks off their hands.

Vince Cable: "It is clear that the conditions set by the government over the original capitalisation were a sham. No effective monitoring and controls were put in place to ensure that the money went where it was intended." That is in lending to home-owners and business. The disappearance of public money was largely to be expected because it was also telling the banks to build up capital against the

worsening economic situation caused by their not lending to business.

Anything from £200 billion to £500 billion goes to banks to insure against potential losses in return for them to increase lending by about £40 billion.

Britains financial sector is about 9.4% of GDP; the Swiss is over 12%. Perhaps better to have let a few banks go to the wall with their big bosses massive pay-offs. Emergency legislation could have handed over the banking job, say, to the supermarket chains, to lend money, while the banking system was purged.

The top five US banks paid out \$38 billion dollars in bonuses in the crash year of 2007-8, up from \$36 billion of previous year record profits.

This dislocation of results and rewards explained by one condescending Wall-Streeter: "Joe-six-pack is never going to get this, but if we don't pay the bonuses we lose the talent."

Bosses making millions bankrupting Britains banks. Taxpayers have been voluteered to pick up the bill. Trashing one or two banks has done many bosses no harm at all, as future managers will have noticed.

There used to be five accounting firms, till Arthur Andersen was caught shredding incriminating evidence in the Enron scam. The four earn millions selling consultancy services to the banks, they are supposed to be auditing, creating a conflict of interest against whistle-blowing.

Deloitte appeared to raise no concern over RBS, which was to become the worlds biggest bankruptcy, but have been re-appointed

auditors.

The big four auditors control the world market, can set high prices, passed on to the share-holders. They dominate the committees for standards and (non-)liabilities of accountants.

Bankers, regulators and auditors were playing an "elaborate game" with "detailed and complex rules absolving any of the players of responsibility for anything, yet they all became fantastically rich from plundering our money."

The authors, Craig and Elliott, conclude:

never again should ordinary people's liabilities to any failing financial institution exceed more than five per cent of GDP. As for us being exposed to losses that were potentially greater than the country's GDP at just one badly run bank, this is so absurd that it hardly seems believable that our leaders allowed it to happen. Unfortunately for us, our politicians' and regulators' self-interest has become so entwined with the interests of a few bankers that our government has pursued and is continuing to pursue policies which seem to favour financiers over ordinary people. Nothing any of our politicians or regulators has said so far gives any confidence that this imbalance, where the interests of over 60 million people are so cynically subordinated to those of a small but influential elite, will ever change.

C is for Crash diet after Britain's Credit Crunch.

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The public sector grew from 38% in 1997 to 48% by 2009. Studies show 10% increase liable to reduce GDP by 1.5% and thus undermine ability to pay off debt. This trend almost mirrors the period from 1964 to 1976, when Labour had to go to the IMF in return for public spending cuts.

The need is to ring-fence front-line services, not Tory plan to bring in armies of accountants and consultants, frantically lobbying to look for department cuts, thus adding to costs, rather than reducing them, and putting-off making obvious and necessary savings.

The Inertia of Large Numbers: Wander round a department, attend a few pointless meetings; assess the poor quality of decision-making; notice the level of inactivity.

The levels of managers cannot see that they are the problem and only can cut down essential services. e.g. police cutting down front-line officers, while awarding managers huge bonuses.

500,000 out of 800,000 new posts have little to do with providing direct services to the public. Not hiring them would have saved £20 billion as well as their pension liabilities.

We will be told that tough decisions have to be made, meaning that the elite expect to reduce the quality of life for the many, so that the few can continue their excesses.

On the contrary, here are half a dozen points to cut waste and inefficiency without damaging and possibly relieving beneficial services:

1) £7 billion. Immediate savings in cost of bureaucracy: stop all bonuses, early retirement or redundancy pay-offs and recruitment of all but front-line services, such as police officers, doctors, nurses

other medical specialists, teachers, and a few categories of manual workers for maintenance work. A public sector pay freeze for all those earning say over £40,000 p.a. Savings of £1 billion p.a. are a start, out of £670 billion p.a.

Declare a national emergency, like the Heath government 3-day week and put all public sector managerial and administrative staff, not dealing directly with the public, on a 4-day week. This would include all council and all NHS executives and managers and most admin in the main government departments, like health, education, the Cabinet Office, business enterprise and regulatory reform (or whatever it's called this week), environment and many others, and almost all staff working for regulators and quangos.

Admin processing things like driving licenses, pensions, benefits, passports etc should be exempted but their managers should be put on a 4-day week. Least disruptive probably to take every Friday off.

Private sector companies have used reduced numbers of shifts and shorter working weeks to save money while protecting jobs.

Letting the "multitudes of policy advisors, executives, managers, communications professionals, diversity officers, community relations specialists, involvement officers, diet advisors, racial awareness specialists, equality experts and administrators take every Friday off" should save about £4.5 billion a year, including £360 million from 40,000 managers in the NHS alone.

After about six months adaptation, reduce at least half the managers to a 3-day week, eventually bringing-about savings of say £6.8 billion p.a., without any costly retirement payments or redundancy packages. And without having to fight unfair dismissal cases.

If they don't like it, let them go voluntarily for productive work in the private sector, to make wealth instead of spend it. Their hanging-on would show that their working lives are still preferable to the stress and insecurity and inadequate pensions of the private sector.

Cutting jobs is old-fashioned thinking costing more than it would save, at least in the short term. Later, government could look at the need for all the jobs.

The authors suggest reducing Parliament to sitting a 3-day week since most laws come from Brussels. They would halve the number of MPs and merge constituencies.

(Reviewer comment: But this would tighten the control of the two-party system and hence their pay-masters. Bigger single-member constituencies are harder for any but one of two parties to win. This explains fewer constituencies being Tory party policy.)

2) £11 billion. Make managers manage instead of having so many of them telling others what to do in meetings and documents. Move the transformers and improvers to line-management. Just imagine all they'd save if they actually used all their supposed expertise.

End departments hunting around for ways to spend their budgets, and make their jobs depend on cost-effectiveness.

Move spending decisions close to where the public can see it is their money being spent and give the locals power of choice. Give a school its own budget, to alert parents to useless spending on a superfluous official rather than say another teacher or equipment.

Local policing and court budgets with elected police chiefs would pressure crime-fighting rather than bureaucratic bonuses for political correctness.

[PS. After 2010, the police commissioners, on huge salaries, were elected on turn-outs around 17% of the vote. A police representative in the House of Lords complained the Supplementary Vote was too restrictive of choice, compared to the Alternative Vote.

AV was used to elect the Labour leader, Jeremy Corbyn, in 2015, four years after the bulk of the Labour party defied their leader, Ed Miliband, in opposing it.]

3). £5 billion, a saving of 1%, by liberating front-line workers, who know best how to make improvements, yet made afraid to make them, by layers of management, all keen to keep their badly-run empires from prying eyes.

Value for Money unit under the Treasury should be obliged to investigate, within a month, all front-line suggestions and their recommendations rewarded at 5% of the savings up to £100,000. Management shouldn't be so rewarded because making continuous improvements is their job they are already paid for.

4) £5 billion from better buying. Of £170 billion, a 2% procurement improvement (4 to 5% is quite common in private sector initiatives). Despite the Office of Government Commerce providing jargonised versions of freely available advice, the private sector will over-charge inexperienced government buyers.

Since the American Civil War, and rejuvenated in 1986, the False Claims Act allows citizens to sue against fraud or corruption in government contracts and programs. Whistle-blowers allowed between 15% and 25% of the money saved the government. A 1% saving means £1.7 billion p.a. saved. The main value in US is admitted to be deterrence worth hundreds of billions.

5) Low-hanging fruit. £23 billion plus £4 billion p.a.

Kill "Connecting for Health," saving up to £10 billion. But ensure computer compatibility standards and that any locally-bought computer system has at least 10 other willing buyers or users. Would also stimulate the almost destroyed British healthcare computing industry and earn exports.

Austerity Olympics could have saved £8 billion by cutting on needless duplication of facilities etc.

Pay for consultants or interim managers should be cut by £2 billion out of £2.8 billion. No department should be allowed more than 0.1% spending on them. Consultants should have to itemise their projects and the exact benefits to be gained from them.

Scrap ID cards, save £5 billion. Worst of both worlds the government goes ahead but most people don't have to take part for the supposed benefits. Scrap Contact Point childrens database and computer system. It cost £200 million but at least we wouldn't have to pay £44 million p.a. to run it.

Cancel all government advertising, especially for jobs and put them on a website.

Bring the army home from questionable and unwinnable wars to help-out with the social problems caused by the governments benefits-dependent generation.

Scrap Private Finance Initiatives. Public buyers out-smarted.

6) £8 billion savings in longer term.

Prevent an investors strike with no-one willing to buy government debt, and having to beg the IMF, who will make the government control its spending, anyway. And prevent losing credit status, which

would make borrowing more costly and increase the nations problem. The following means necessary:

Emergency legislation makes public sector employees, on, say, over £50,000 p.a., get pensions based on average rather than final salaries with their retirement ages raised to 65.

[Reviewer comment: Early retirement makes way for youth employment.]

All lump-sum payments subject to full income tax. The Lifetime Earnings Limit for a special tax should have an equivalent in public sector.

Any public sector worker, getting £25,000 p.a. or more, should be disqualified from the basic state pension. They already get enough public money, saving about £400 million p.a. In all, public sector pensions cut by about £2 billion to £3 billion p.a.

Prosecute the bankers for financial wrongdoings. Maybe only would yield £50 million to £100 million but would send a message.

Bring benefits culture under control. French politicians constantly complain about how it is drawing mass immigration from all over the world. Costs more than government gets from income tax.

British passport should depend on working full time five years without benefits. Immigration on needs, not on who wishes to come here.

Cash benefits restricted to people holding British passports, who live here permanently.

New age of responsibility and self-sufficiency.

Keep fees for less needed courses, not essential skills.

No benefits or council house provision for under-21s. This should save £5 billion out of £140 billion in benefits.

Lots of unnecessary complicated legislation immensely costly and bureaucratic, such as 500 inclusion officers.

Darling made a small cut in VAT that was pointless and cost businesses an immense amount of unnecessary work.

Massive admin and enforcement machine for BBC TV license could be avoided by pay out of general tax.

Corporation tax evaded by larger companies going to other countries, so smaller businesses pay unfair share. Simplicity of using just one tax, VAT, hundreds of millions saved in admin and billions in lost tax could be collected.

[This reviewer doesn't favor Value Added Tax, which may penalise essentials, as well as luxuries. VAT is essentially a toll tax, which Adam Smith argued against, in principle, as a halter on free trade.]

P is for Power to the People.

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Unions down from 13 million to 6 million in 30 years: 15% in private sector; 58% public sector. Public sector unions routed government attempt to raise pension age to same as private sector.

New Labour managed the Westminster lobby of journalists, favoring the friendly and pushing out the over-critical, notably Andrew Gilligan, former BBC journalist for correctly reporting deceit leading to Iraq war.

For a decade or so, Press failed to reveal how gross sums thrown at public services without much noticable improvement.

Media are moving from information to infotainment. Dumbing down, sound-bites. Lack of critical questioning of politicians.

The Freedom of Information Act passed by late 2000 didn't come into effect till 2005, almost the longest legislative delay in living memory. In the intervening four years, there were constant rumors of departments cleaning up their archives and removing info in the name of efficiency.

Some success in exposing waste in British government, but Fol needs extending to discover how hundreds of bodies are using taxpayers money: city academies, regional development bodies, the nationalised banks, quangos and fake charities.

Above all, the unredeemed European Union needs transparency.

By 2008, a strengthened Corporate Manslaughter Act (Corporate Homicide in Scotland) failed in its former or later form to be used to prosecute the many needless deaths from negligence over infections under the Maidstone and Tunbridge Wells NHS Trust, 2005-6, and, from 2005-8, the Mid-Staffordshire NHS Trust.

The Human Rights Act of 1998 into force by 2000, makes it unlawful for bodies to contravene the European Convention on Human Rights. It gives rights but neglects responsibilities. Thus, a right to education neglects the responsibility to be educated to contribute to society. And a right to marry and have children neglects the responsibility to support them without depending on public (other peoples) money.

Craig and Elliott:

Like so many laws introduced by this government, it can seem as if the HRA has been mainly hijacked by the feckless, idle, greedy and criminal rather than serving the interests of the huge majority of the population.

A European Court ruling has "put the right to dignity of foreign nationals above the right to life of EU citizens." The people who seem to have done best out of human rights are the lawyers, especially the Matrix group, where Tony Blair's wife Cherie Booth worked. Matrix lists at least eleven major areas of law affected by HR laws.

Thankfully, ordinary people also cottoning on. In 2008, a judge ruled that article 2, right to life, allowed sue the Ministry of Defense for faulty equipment causing unnecessary deaths in the army.

This could apply to gross failures to protect patients from infection or citizens from known violent offenders.

Article 41. The Right to Good Administration.

Wasteful and corrupt EU spending has caused the auditors to refuse to sign-off their accounts for fourteen years in succession. Any member country or group of citizens might prosecute the EU for failing good administration and in the required reasonable time.

Perhaps the squandering by the NHS IT system is another case in point.

Under British law, directors do not have a duty of care. Shareholders may bring class actions to sue directors for negligence. This includes many unit trusts and pension funds, yet none seem to have shown any appetite to sue the banks and their well-rewarded executives.

The Bank of England, the Treasury and "even the ever supine FSA" should be considering bringing civil lawsuits against many

for negligence, breach of fiduciary duty or violation of investment regulations by publishing potentially misleading information about the financial condition of the banks over which they presided. Even though some charges might be difficult to prove, faced by years of potentially ruinous litigation, many of our great financiers might be prepared to settle out of court. Given the vast wealth that these people have accumulated over the years, this action could rake in tens of millions for taxpayers and send a message to other people that the public, through their representatives, will not tolerate the kinds of behaviour that we have seen over the last few years.

Predictably but disappointingly, the politicians and the bureaucrats, who are paid so generously by us, seem unwilling to turn on their friends in banking."

The "charmed circle" are almost never prosecuted while "the public are groaning under the thousands of new laws" introduced by New Labour.

Private prosecutions are costly and risky and would depend on wealthy philanthropists.

Equality and Human Rights Commission, 2007, merging three other quangos. 482 people, on £60 million p.a., have been used for trivial but very costly complaints.

The authors even encourage other trivial complaints to show how ridiculous it is.

(This reviewer does not approve of this sabotage. The complaints system of changing the burden of proof from presumption of innocence, to proof of non-discrimination, seems a bad precedent.

We should not go along with it, even in jest. Besides it only courages a waste of public money.)

The post-democratic age.

Most laws made by 27 unelected European Commissioners in Brussels with 45,000 unelected officials and 100,000 part-time advisors. The EU Parliament can only make small amendments to about half of their laws.

Is this the death of democracy? the authors ask.
They suggest primaries, the Recall.

About 405 out of 646 MPs are in safe seats. In remaining 241, the swing has to be pretty large to worry most of these MPs. The 2001 general election saw almost no change.

The authors seem unaware that proportional representation does not have to mean party lists and more safe seats. The single transferable vote (STV) can make elections personly represent voters.

In British Columbia, the corresponding body to Britains Taxpayers Alliance was the first large group to come-out in favor of STV, during the deliberations of the Citizens Assembly on Electoral Reform.

7 april 2010.

[PS: It is ironic that I gave this hint about promoting STV to Matthew Elliott of the Taxpayers Alliance, because, in 2011, he headed the victorious, and I have to say, infamous, No-to-AV referendum campaign.

Nevertheless, the Alternative Vote was not a system to be landed with, as Australia has been, for its federal lower chamber. As the Australians say, all the Alternative Vote does is put the (over-all majority) post in First past The Post.]

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A default government pushes more nuclear power pollution.

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"We don't want to scare the country to death."

Dwight D Eisenhower, in 1953, forestalling tactless truths about nuclear stockpiles of destruction.

Rear Admiral Daniel Gallery... asserted it was wrong for a civilized society like the United States to have as its broad purpose in war "simply destruction and annihilation of the enemy." That kind of war was not as simple as the prophets of the "10 day" atomic blitz seemed to think..."Levelling large cities has a tendency to alienate the affections of the inhabitants and does not create an atmosphere of good will after the war."

"...on the President's desk when he took office in January 1953...was the report of a special commission...Forecasting to the year 1975, the study predicted oil shortages and concluded: "Nuclear fuels, for various technical reasons, are unlikely ever to bear more than about one-fifth the load...It is time for aggressive research in the whole field of solar energy -- an effort in which the United States could make an immense contribution to the welfare of the world."

In the intervening years, some \$200 billion have been spent

throughout the world in attempts to develop nuclear power. Solar has received perhaps one-thousandth that amount.

Quotations from The Nuclear Barons, first published in 1981, by Peter Pringle and James Spigelman.

Section links:

Misplaced ambitions.

The return of [the radioactivists](#).

The [dependent](#) energy review (2006).

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The [nuclear weapons](#) connection.

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Some [energy](#) alternatives.

References.

Misplaced ambitions.

More nuclear fission power stations are the worst energy option of all: deadly dangerous, insecure, costly, inefficient and inequitable. That the Labour government should be promoting them in its 2006 energy review makes no sense at all. This debate should never have

been re-opened after the 2003 energy review. The policy reversal may be put down to the anti-democratic centralism of over-bearing leaders serving monopolistic opportunism. A conclusion to be drawn from their fatuous decision is that politics pursues vested interests, such as the nuclear lobby.

Who will prevent future generations forever being left with corporate government legacies of poisonous wastes? The government is unscrupulous in pursuing more nuclear power. But the public, in a free society, could prevent them on this and other attempts to override their wishes. Not only government incompetence is to blame but also public ineffectiveness.

A peoples response to this situation is that the public interest must be made foremost in politics. Two minimum but neglected conditions for this are firstly, for all official elections, the democratic voting system, the Single Transferable Vote, which seems to terrify most politicians more than another Chernobyl. Secondly, the principle of "equality of lobbying" implies universal vocational suffrage. All occupational and professional elections could include proportional representation by STV to the second chamber of government.

No-one could fail to be impressed by the energy released from an atomic bomb, not least the physicists and engineers and administrators who released it. Seeking to make amends, "atoms for peace" has been hand in glove with bomb production from the early years. Both became conventional wisdom. I remember in my impressionable youth believing that nuclear energy was the science fiction-like debue of an awesome power of the future. That is not entirely wrong but it has proved seriously premature.

Fission energy stations are the Professor Branestawm of big government and big business. They are one means of many for powering a dynamo or electric generator. But so-called "nuclear

electricity" is just the stupidest possible means of turbine-turning. Using radioactivity, to boil water for steam turbines, loads the planet with highly diffusive and more or less permanent pollution.

Every other means of generating electricity, from harnessing the various renewable natural forces down to the wind-up radio or wind-up torch, are models of sanity and practicality, in comparison.

The argument that nuclear power reduces carbon emissions is specious, because its pollution is far deadlier than the carbon emissions of conventionally fueled power stations. And chemical pollutants might just as well be contained from fossil fuels, so that a new generation of coal and gas power stations could then be labeled environmentally friendly.

Coal-fired power could be modernised to run more efficiently at higher temperatures and pressures, cutting carbon emissions. This would be radically cheaper than a new power station. This is not to forget that fossil fuels are inherently dirty and that organic chemicals really are much too valuable to burn, when renewable energies are available.

However, with new carbon-capture technology, carbon dioxide, from coal and gas, may be pumped into the ground, making such power stations minimal contributors to global warming. Again, renewables are preferable, because we cannot be sure carbon sequestration is secure. As to accidental carbon emissions from such up-graded stations, it would be no serious matter. Whereas if there are radioactive emissions, it may be a matter of life and death, for who is in the way of their dispersion, or whether the land and water they blight will be habitable, harvestable or drinkable for the foreseeable future.

There is another reason why we should not go for a new generation of nuclear power stations, which I've not heard mentioned in Britain's

current energy debate. So, I'll mention it here to give it some prominence on this page. Current nuclear technology is, of course, fission energy. It takes ten or twelve years to commission a new station. They wouldn't all be built at once.

In a few decades, they will be obsolete. The real new nuclear generation of power stations has just begun in France, site of the world's first fusion energy station. This is the biggest joint scientific venture on the planet, second only to the inter-national space station. This has no radio-active by-products, with their unsolved problems of storage or contamination, weapons or security and costs. Tho, the fusion reaction would still need a radio-active trigger.

If humans endure to build space-ships, they would be powered by fusion reactors, probably using helium-3. They would have other independent sources of power, such as solar sails, that already power some satellites. If the fusion reactor breaks down and you have no other means of propulsion, you may be not only lost in space but dead in space. Helium-3 is not obtainable on earth but could be mined from the moon. The helium-3 process does not need a fission trigger reaction.

Any risk of radioactive contamination, in the confined area of a space-ship, would surely be eliminated from the design, because there is no-where else for a crew to go.

The moral is the same for space-ship Earth. We should not be building more fission reactors to spread their permanent poison over the planet. The poison, like less durable but still lingering chemical poisons, may or may not be harmful at low levels but that isn't any reason not to prevent their build up.

Most people may feel they could live with fusion power. Nevertheless, fusion is not the ideal form of domestic energy production. It removes most of the danger but danger is not the only

issue. It is extremely centralised power and as such vulnerable. It also makes a population dependent on it, vulnerable and over-charged. Small is Beautiful, as E F Schumacher writes.

Decentralised energy would be transmission-efficient and less costly for local consumption. Energy independence is in the interests of the people, the human race as a whole, rather than conglomerates making monopolistic profits from the centralised supplies of power stations, conventional or nuclear, that we have now.

Friends of the Earth may be right in preferring tidal lagoons as less damaging to the environment than one grandiose Severn barrage. Britain has by far the best tidal power potential in the world. Making use of many tidal lagoons around the British Isles would be more transmission-efficient and less vulnerable to accident and sewage build-up. It would also spare one of the most important bird migration spots in the world. The wonder-of-the-world can turn out to be a monumental folly. It's called: putting too many eggs in one basket.

The return of the radioactivists.

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Just before the 2005 election, The Independent carried a leak of the Prime Ministers intention of a new energy review, to legitimise more nuclear power stations, rejected by the 2003 review. Labour kept it quiet so as not to lose anti-nuclear votes to the Liberal Democrats. But Labour could lose another million votes or so, in the next general election on this issue alone, if they elect the likes of Gordon Brown as the new leader. This would deservedly lose them the election. On 14 april 2006, Liberal Democrat David Howarth said: "Going through a long review process, only to come up with whatever answer Tony Blair wants to hear, is no use to anyone."

Trade and Industry secretary Alistair Darling said he wants to make it easier to replace ageing power plants "to meet our energy needs." Presumably, this means Confederation of British Industry (CBI) energy demands. Also, such as the white collar-union Amicus. Maybe a third of Labour MPs support more nuclear power. It is a jobs issue in often marginal constituencies. People will vote with their pay packets. But this is not necessarily in the long term interest of everybody.

In Parliaments energy review debate, a Labour MP said 17,000 of the 40,000 nuclear workers were in his constituency. He said they would take another nuclear power station. He appeared willing to take on more than one more. But it might be charitable not to presume on such gallantry. What cannot be cured must be endured. And, it seemed from this MP, might as well be endured with some braggadocio.

It's one of the cases against single member constituencies. If there's a nuclear power station in the constituency, on which a living depends, then they can sway who gets to be MP. With a multi-member constituency, candidates have to face opposing arbitrators, and can make rational choices the public can respect, rather than be in the pocket of one vested interest.

That's only one example of the general vulnerability of single member constituencies to particular interests, regardless of the public interest. It may apply to constituencies with prisons, if prisoners are given votes in accordance with new European Rights directives.

We already knew the government want to "streamline" major planning inquiries. In January 2006, The Independent learnt that "senior nuclear industry figures also want to strip public inquiries of

the power to investigate the safety of Britain's new generation of nuclear reactors."

The Prime Minister twice addressed the CBI on more nuclear power, suggesting who is pulling the strings here. Greenpeace activists disrupted the first meeting. And the CBIs Sir Digby Jones, just like a self-serving government minister, went on about the PM being the democratically elected government.

Actually, he and his government are nothing of the sort. It is a usurping government with a usurping review. For one thing, Blair is not a president and would most probably not have been elected a third time. His governing party was elected only by default on 35% of the votes. They are not there with the consent of a majority of the British people. They are there because of a deficient electoral system, which is too beneficial to the two main parties for either of them to have the decency, honesty or integrity to democratise it. Tho, it is perfectly within the wit of man to have a democratic voting system, rather than various party-controlled shams they pass for voting systems.

Reported on 17 may 2006, Blair addressed again the CBI, to say that a new generation of nuclear power stations was "back on the agenda with a vengeance." It is up to this generation not to have to take "Blairs vengeance" on future generations from permanent contamination by radio-activity. Blairs vengeance is just a melodramatic gloss on a failed experiments refusal to suffer private loss, as long as the public may be made to suffer.

Despite any follow-my-leader effect, an IBM poll, for The Sunday Telegraph, 21 may 2006, showed that 47% opposed new nuclear power stations in Britain. 40% were in support. 12% said they did not know. 1% refused to answer. 56% of men but only 26% of women supported new reactors. The report by Melissa Kite didn't say how

many women were opposed. But 60% of women were said to be fearful of nuclear power stations. 49% of people said they were fearful of them and 47% said they were not.

British women have been culturally permitted to show their emotions more than men. The foot-baller Paul Gascoigne crying, over an unjust penalty at the World Cup, was voted Britains most memorable sporting moment. For a man to show distress, in public, was traditionally held to be an admission of weakness. Women may be less frightened of showing justifiable fear.

Kite said Westminster was taken by surprise because the PM had pre-empted the out-come of his own energy review. Greenpeace director Stephen Tindale also accused the PM of prejudging his review. The PMs bias lent weight to the widespread criticism that the review was a front all along.

Why did the PM take the offensive, giving offense to many? The Sunday Telegraph suggested several things like "sticking up two fingers to his own party and the CND."

Well, he'd already done that, when he pawned the Labour party, without even its treasurer knowing, to scrape his phoney victory in the 2005 general election. This financial usurpation is just one symptom of general elections turned into a degenerate presidential election for a party leader, without electoral reform to an effective choice of parliamentary representatives.

The Telegraph also suggested he was asserting his authority by setting the agenda. This is what an authoritarian, who has announced "the end of the liberal consensus" in British politics, would do. As The Times Simon Jenkins said, Blair and Brown are "natural authoritarians." The assumption of power is the enemy of questioning assumptions by which people learn. Knowledge depends on freedom as freedom depends on knowledge. Seeking to

suppress or brush aside that freedom turns back or perverts human progress.

The PMs out-burst over-shadowed and over-rid a recent rejection of nuclear power by the governments own advisors, chaired by Sir Jonathon Porritt. The Independent summed their verdict on fission energy as: dangerous, expensive and unwanted. The growing waste disposal problem has not been solved. It is a target for deadly attack and use in nuclear weapons. They warned that the public could end up footing the huge bill, as they had for the previous economically failed generation of nuclear power stations.

The public would, in any case, be effectively paying a huge policing bill of defending the indefensible. An expensive nuclear programme would divert limited resources and attention from a great variety of useful solutions with important contributions to energy production and saving.

Asked what he thought of Blair not waiting for his energy review evidence, minister Malcolm Wicks said: "Well, he is the Prime Minister."

That's a response that invites a fresh look at that office and its powers, which have burgeoned with the lack of democracy in general elections. The single members are monopoly nominations of a local party. Local party choice over-rides local individual choice. And national party choice over-rides local party choice. In the absence of presidential elections, general elections are substantially a choice between party leaders, because offering a mostly ineffective choice of local representatives.

Previous environmental advisor, to Margaret Beckett, said, on 10 July 2006, on radio, that Tony Blair favoring more nuclear power stations had been the worst kept secret in politics.

Jonathan Leake said:

although nuclear power provides about a fifth of Britain's electricity, this translates into only 7% of the nation's total energy needs.

About a third of the energy that we consume is in the form of oil and petrol for transport while the rest - mainly gas and coal - is used by industry and for heating buildings. Nuclear energy simply cannot replace fossil fuels for such purposes...

[The 2003 energy white paper] set out licenses restricting companies' carbon emissions, grants for energy saving insulation and a range of measures that could all be used to reduce demand without affecting the economy or people's lifestyles. Such measures could, it suggested, slash 25m from the 183m tons of annual carbon emissions in Britain.

The day before the Blairite energy review was due, The Trade and Industry Committee expressed concern that its out-come should not be rushed thru without consultation. They suggested energy short-falls may have been over-estimated and that prolonging the life of some existing nuclear power stations would be better than rushing into a new generation of nuclear plants. And they criticised the government for failing to carry out a "full assessment" of energy needs. MPs urged the government to ensure it has "broad support" for its policies and criticised it for failing to build a cross-party consensus.

But this is the problem with government under an exclusive political system. The partisan electoral system and whipping system, the lobby system empower exclusive vested interests with closed minds incapable of good judgment. Until people learn this lesson, they are always going to have this problem.

Politically correct talk about "inclusion" is hypocrisy under party oligarchy. The PMs "Respect" agenda belies its intentions by setting up yet another wasteful bureaucracy. Most politicians do anything but empower the people with, for a start, the democratic voting system and a vocationally representative second chamber, which actually would respect everybody politically and economically. Place-holding politicians appear without self-respect, let alone for anyone else.

A University of East Anglia poll, reported, on 17 January 2006, said 63% accepted a mix of renewable and nuclear energy. This was interpreted as Britons "accepting nuclear power." But it is not clear from the other statistics that it means that at all. 62% said it doesn't matter what the public thinks as new stations will be built anyway.

Obviously, such a state of mind is not conducive to taking the trouble to assess for oneself what is best for the country's future, as one's efforts will be wasted anyway.

As the 2006 Power Inquiry said: "The current system is killing politics in Britain." And one might add that top-down decision-taking may kill more than politics.

In the same study, 78% thought renewable technologies and energy efficiency were better ways of tackling global warming. That suggests that Britain "accepting nuclear power" is a case of putting up with what big business and government are determined to shove on the country.

54% said they'd accept nuclear power stations if they helped to fight climate change. This is one of my favorite candidates for "There are lies, damned lies and statistics" (Disraeli.) The conditional question is based on a false premise. Critics say carbon dioxide emissions would only be reduced three to four per cent, at a giant cost, from new nuclear generators, that could be better spent. Hardly a

recommendation for meeting the global warming emergency.
[PS. In 2015, EDF admitted, as soon as it was given the go-ahead, that it wouldn't be on schedule.]

The question is like pointing a climate-change "gun" at the interviewees head and demanding nuclear power stations or else. The surprise is that nearly half the questioners refused to be intimidated by the bluff.

There is what lawyers call "a leading question." In other words, nuclear power versus climate change is a mis-leading question. The "leading question" really meaning a misleading question reminds me of the Labour party accepting "the principle" of its Plant report that there should be different voting systems for different political bodies. That is to say their "principle" is they don't have any principle. The Labour party in government don't know the difference between law and anarchy. To quote John Reid about his new ministry: They are "not fit for purpose."

On 11 July 2006, the Green Party came up with their own poll of 500 Britons. They found almost 9 out of 10 reject the nuclear option. 98% back greater investment in renewable energy. And 99% said that more should be done to promote energy-saving measures in the home.

The Greens said: "This puts paid to any suggestion that nuclear power is accepted."

The dependent energy review (2006).

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The 2006 energy review was no more independent than the so-called "Independent" Commission on Voting Systems, chaired by Roy Jenkins. On 11 July 2006, Alistair Darling heralded the energy review by saying nuclear power had always been part of the energy mix and "should remain so." This statement is illogical. It doesn't follow that because something has been, it should remain. And if it's not meant to be a reason, then it's mere assertion, which there is no reason to follow. Because the Minister, or his Prime Minister, says so, is not a reason for doing something. We do not have to acquiesce in an ignorant politics of unquestioned authority.

To this Pangloss government, its existing in its present state made it the best of all possible worlds, that must be protected from change.

The Tory opposition spokesman said the energy review was not so much carbon free as content free. The Liberal Democrat spokesman welcomed the positive aspects of the report on increasing the use of renewables from 4% to 20% by 2020 and energy conservation in households and appliances. But he accused the government of "surrendering" to the nuclear lobby instead of building a cross-party policy on energy. The Lib Dems are against the building of new nuclear stations. The current Tory thinking is that they should only be "a last resort."

Darling interpreted or misinterpreted this as meaning that the Tory leader didn't want nuclear till later. It must be admitted that Lib Dem policy is more forth-right. They are renouncing any more of these hostages to fortune. Whereas the Tory reformers haven't recognised there is no point in having even a few more hostages to fortune. Darling took comfort from recently leaked Tory party e-mails that there was a rebellion against the Zac Goldsmith anti-nuclear stance. The Tories showed themselves to be as divided as Labour. This was Darlings excuse against a cross-party consensus on energy policy.

The Tory pro-nuclear rebels gave the Labour government a big let-off. David Cameron is going to have to get a grip on this issue, if it isn't to undermine confidence in his leadership and his party. Blair and Brown have already revealed themselves as lost souls to nuclear power, not to mention other kinds of power.

[PS. This essay was written during the Cameron pretence they would be "the greenest government ever," when he was palling with huskies, in the arctic, to scrape for votes from Green and Liberal Democrat supporters. Normal Tory turpitude has since been resumed.]

The government are going to make planning permission for windmills and nuclear power stations easier. Some local authorities already give automatic clearance for domestic wind-mills. Anyway, that shouldn't be much of a problem. That is not much of a bargain if it is also not much of a problem for some consortium to put a nuclear power station by your house. So much for government even-handedness between big business and the public.

Yet, politicians dare not give permission to build a reactor in a built-up area. If it blows, it takes the city with it. Also, some research on the density of cancer-related illnesses, suggested their radio-active leaks might be deleterious to health. The government can only bully and bribe sparser communities into having to put up with nuclear fission hazards.

The Labour government has been cited as wanting six new nuclear power stations. They hope to follow (according to Finnish Greenpeace) the "stupid" decision of Finland, which has ample renewable energy sources but, after repeated pressure, needlessly paid for the multi-billion pound costs of turbine-turning radio-activity. This sends the wrong signal to Britain, which also has a wealth of

renewable energy resources. The government no doubt counts on people having to make the best of its impositions.

A few new nuclear stations would make a negligible contribution to combating carbon dioxide emissions. So, that isn't the real reason for it. It is also not so big a contribution that could not be spanned otherwise by Britain's potential, tidal, wave, wind and geo-thermal, hydro-electric and solar power resources, plus energy conservation. So, that's not the real reason for it.

Darling gave a possible clue: maintaining the status quo. The government is not really looking at a change in direction that would be in the public interest. These leaders are really agents of business as usual, regardless of the general interest. Also, vested interests reason for being is to aggrandise themselves, not put the general welfare first. So, one could expect a few nuclear stations to be expanded up to the original ambitious twenty threatened. Economies of duplication would be cited, a dishonest limit on ambition forgotten, after the foot is in the door.

Joan Ruddock MP asked how long would nuclear power take to make a contribution and how big would the contribution be. Darling just brushed the questions aside, by saying he didn't think they were important. By refusal to answer her questions, he ungraciously conceded that new nuclear power stations have no significant contribution to make against global warming, indeed waste limited resources. And that the real reasons for them are the usual one that government puts the interests of the big business lobbies before the public interest.

To appreciate Parliament, one only had to listen to how MPs questions probed the weak points in the government position. Darling said the nuclear industry would pay its full share in the commissioning and decommissioning of plants. Some MPs wanted a

more explicit definition of full share, such as 100% of costs. But the minister wouldn't be pinned down.

Another MP wanted to know if this nuclear self-financing included security.

It didn't. The minister couldn't wriggle out of that one, for fear of scaring away private investments in fission plants. He tried to make his admission as unobtrusive as possible, by merely saying he didn't agree with the questioner. But this means that limited resources for public protection are diverted and concentrated on these white elephants. Private profits are massively subsidised at public expense to the detriment of public safety.

Another MP asked what about the supposed profit from nuclear, if the price of uranium rose. And another MP asked was it not inevitable that once nuclear power was in place, the country would have no alternative but to accept the going price, not being able to do without. The Liberal Democrats likened more nuclear power stations to another stealth tax.

[PS. This question proved prophetic. The Tory government was determined to secure a nuclear deal at any price. On 24-09-2015, an energy analyst interviewed on the BBC said wind energy was already cheaper. This was on the occasion that wind energy produced a quarter of the nations energy, for the first time producing more than coal at one fifth.]

Ned Temko, of The Observer reported, on 9 april 2006, that the government would cap companies liabilities and guarantee a minimum energy price before business risk takers would take any risks with nuclear power.

The environmentalist Tom Burke claimed: "since the Treasury will never agree to pay for the power stations, the electricity market will

have to be rigged for 30 years to guarantee a return for nuclear investors."

Jonathan Leake concluded:

Three decades of bigger energy bills for homes and businesses:
will that be Blair's real legacy?

[PS. This is what happened under "Blair's heir, David Cameron, a thirty-five year guarantee of ten per cent profits to the French nuclear industry.]

Michael Meacher MP wanted to know from the government why the new nuclear stations, given that we already don't know what to do with all the radio-active waste, the huge insecurity and uneconomic expense to the public. Some MPs tried to shout him down. The Speaker had to call for order to let him be heard.

Darling appeared to try to forestall his question by saying "I know where you're coming from."

The Minister as witch doctor sounded as if he'd seen an approaching asteroid from outer space, and hoped to divert it by saying "I know where you're coming from." Darling's reaction personified the charade of private-interests government. It pretends it is doing something but really does little more than hope Earth misses the "asteroids" of vested interests and their disasters.

The threats of these disasters were illustrated in two stories, I happened to see on the same day, 23 July 2006. One was in The Sunday Post. It revealed that several truck loads of radio-active waste had been side-lined in a heavily populated area for eight years. This was excused on the grounds that the British government couldn't come to some sort of agreement with the Egyptian government.

The other story was of a radio-active truck-load intercepted on the Bulgarian border, on its way from a British firm, with apparent export approval, to Iran. The contents were referred to the Bulgarian atomic agency. According to the Mail account, the lead containers were destined for the Iranian Ministry of Defence. They contained Americium-beryllium capable of use for manufacturing a "dirty bomb." Such material is "mainly found in spent reactor-fuel elements and is not at all easy to get hold of."

A similar incident happened in august 2005, this time concerning a ton of zirconium silicate.

These chance news items high-light why Meacher found ominous all the nuclear waste sloshing around the country and the world.

Michael Meacher might have made a good Labour party leader. He espoused radical remedies before they became fashionable enough for David Cameron to make a sensation by Toryising them. Meacher was reviled for what now earns Cameron credit of being a Nice Man, Pity about the Party. To date, only one little-known Labour MP, John McDonnell, has put up against the spend-thrift Gordon Browns coming leadership "coronation."

The renewed nuclear reign of terror.

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Private profits at social costs have already been responsible for serious radio-active pollution of the planet, just as business products have chemically contaminated the world. A september 2005 study, of the chemical industrys legacy, found lingering traces of everyday chemicals, in mothers and children, which can lead to birth and growth defects.

In June 2005, it was revealed part of a Thermal Oxide Reprocessing plant at Sellafield Cumbria could be closed for months due to a leak undiscovered for up to eight months. Safety regulators claimed the discharge could result in criminal charges. These were brought in May 2006.

In August 2005, the Nuclear Decommissioning Authority wanted to speed up the cleaning of twenty civil nuclear sites from 125 years to 25 years. It gave a cost for decommissioning waste and its storage of up to £56 billion. The figure in The Sunday Telegraph, 21 May 2006, is £70 bn, which the taxpayer is already having to pay for. This is as well as the many billions of subsidies that nursed nuclear power over fifty years.

Even Malcolm Wicks, the energy minister, in charge of the current review, said this is a "disgrace." And, I stand corrected, if he was not the man who notoriously said he wouldn't have any "prejudice" over nuclear power.

Radioactivity afflicts alike the prejudiced and unprejudiced.

Elliott Morley was reshuffled out of the environment ministry, as one can understand from the following sane remark:

To have new nuclear power is going to involve very large sums of money. If nuclear power was so great then you would have the private sector willing to invest in it. The reality is that economically the risks are great and the returns are low.

In April 2006, Florida Power called in the Federal Bureau of Investigation and offered \$100,000 reward to find out who drilled a small hole in a cooling system pipe for one of its reactors, and whether or not it was an accident.

Just consider that accident or no, in the light of apologies for more nuclear power stations. James Lovelock, of the "Gaia" concept, at first alleged that these plants would not be subject to sabotage - because he said so, one supposes. Later he wrote an article for Readers Digest, in which the punch-line was that the concrete casing of a reactor core could not be penetrated by a crashing aircraft. Yet Florida Power goes into red alert because some-one happened to drill a little hole in a pipe. Invulnerable indeed!

5 July 2006, applying under the Freedom of Information Act, revealed that the Nuclear Safety Directorate issued warnings over unexplained cracks in reactor cores of UK power stations including Hinkley Point B. British Energy was also criticised but no immediate public risk was found.

So, there it is! Reactor core coats in future allegedly cannot be cracked. But for the present reactor cores themselves have, well, cracks.

The Independent, 14 January 2006, reported a nuclear physicist as saying: "The public have the right to know the danger. The government says the terrorism threat is real." He predicted an attack on a nuclear power station could kill over two million. The report continued:

The worst-case scenario could see 2,500 kg of caesium-137, the most dangerous isotope, escape - 100 times more than that released in the 1986 Chernobyl disaster.

On 18 April 2006, official UN figures predicted 4000 extra cancer deaths from Chernobyl fall-out. Greenpeace claimed that recent studies estimated there will be 100,000 extra, many in the Ukraine, Belarus and Russia. The BBC docu-drama on the 20th anniversary re-called the terrifying disaster that Soviet scientists did not know whether they could avert. Unchecked, Chernobyl would have

resulted in a massive thermo-nuclear reaction, with millions of casualties, and amongst other things, the permanent poisoning of the water supply from two of the great river systems.

27 april 2006, security specialists told the Committee on Radioactive Waste Management that ministers must act against terrorist attack. "Deep disposal" was recommended, but where, they would not say. The golden rule is that if you don't want it in your back yard, then you shouldn't inflict it on any one else. So, there's no point in producing more unwanted radioactivity. Our undemocratic government is moving inevitably to over-riding local communities on waste disposal, as it promotes the producing of more.

The Mail on Sunday subsequently carried an article by Jason Lewis that Britains shortage of scientists meant an influx of foreign experts had to be screened. 18,000 last year meant the Office for Civil Nuclear Security was already struggling with the work-load. The head of the Office warned that Blairs plan to build a new wave of nuclear plants posed a major risk of terrorism.

"It would make no sense to authorise someone to construct a site who then passed that knowledge to someone with malicious intent."

Britains intelligence service, MI6 admits its recruitment drive has resulted in attempts at infiltration.

The report continued: "This month the Prime Minister struck a deal with France to create a new wave of atomic power stations in the UK."

The Mail, also revealed that Chancellor Gordon Browns brother Andrew is on board of the French nuclear industry. No wonder then that he supports an extension of nuclear power in Britain. The Mail

also revealed that the American nuclear firm, whose cover-up was told in the movie "Silkwood," had bought on board Tory tv personality and newspaper columnist Michael Portillo.

The nuclear weapons connection.

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In 1945, the Hiroshima atomic bomb killed some 80,000. In the following months, some 60,000 died of radiation poisoning. At Nagasaki, the second nuclear bomb, killed 39,000 out-right with another 75,000 dying from radiation poisoning.

These were only minor fission explosions compared to the hydrogen fusion bomb tested a few years later.

The Mail carried an article recently of a big increase in recruitment at Britains nuclear weapons facility. All this is going on, as if it was administrative routine, when it signals major policy decisions taken without leave of the public.

In the same paper, on 25 june 2006, Suzanne Moore commented on Gordon Brown:

We are to have a replacement for Trident whether it works or not, whether the military wants it or not (many don't), without a debate.

This is the biggest spending commitment Brown has ever made...

An increasing number of people, not just on the Left, feel that no one is representing their views in Parliament at all. This

decision, which appears to have already been made, is not a deterrent to anything except a properly functioning democracy.

A few pages on, William Rees-Mogg defends Browns decision. He is well stocked with dreadful memories of the Cold War lasting some forty years after 1945. Indeed, The Sunday Times of 9 July 2006, carried a piece about the increasingly Soviet style repression of opposition opinion. It's fair to say, he thinks, that in a world of increasing proliferation of nuclear weapons among unstable nations, it makes sense for Britain to maintain its own.

Rees-Mogg says that Britain is Americas junior partner with its deterrent - America supplies the missile system - whereas France has an independent nuclear deterrent.

Actually, the United States did give France secret help with developing the neutron bomb. We remember President Chirac, with reckless national pride in coming to office, setting off nuclear explosions in a Pacific atoll - some-one elses irradiated back yard. Crack the foundation of the island and you would have major radioactive ocean contamination.

A Commons committee suggested that Britain no longer needed Tridents 24-hour state of alert and called for a scaled-down deterrent. There no longer is an expansionist, much less a Stalinist, Soviet Union.

On the 10 July 2006, twenty bishops wrote in The Independent that Trident was "evil" and that "possession and use are profoundly anti-God acts." Nuclear warfare would kill millions of innocents and rain sickness on the earth. The guilty would be the best prepared in their bunkers.

The bishops said the money would be better spent on helping developing countries. It would show courage that could be respected. This could spread good will, prosperity and progress.

That is, if, as usual, public money isn't thrown away on corrupt and undemocratic administrations.

I repeat the need for the moral power of example in the proper democratic standard of voting system, and in a two-chamber representation of the economy as well as the polity.

The nuclear submarine has been the capital ship for over forty years time. That's an unusual length of time in a faster changing world. And the Trident replacement is being projected for decades ahead.

The battleship was the capital ship from the turn of the twentieth century up to the second world war, when events proved that, within a forty-year span, it had been superseded by the aircraft carrier. Meanwhile, magnificent battleships were still being built, tho these armoured dinosaurs would be sunk like floating tin baths. The Bismarck was a marvel of German naval engineering but its fate was sealed when its steering was jammed by a torpedo from a few obsolete carrier-planes called "stringbags." All the contending naval powers lost costly battleships by post-Jutland battle rules of engagement. The world moves on.

Perhaps the moral is that if the world is serious about containing war, it must limit the means to fight it, by due process of international law. And outstanding national grievances must be attended to. As the bishops say, money is better spent on plow-shares than swords.

The G8 powers met in St Petersburg with "global energy security" top of their agenda. On 9 July 2006, Teletext reported a leaked action plan for mass expansion of nuclear power for G8 countries with a network of nuclear fuel plants along with reactor sales to developing countries.

Typically, some plan, that the politicians know many people don't want, has to be leaked before we find out about it.

The title of this page referred to "a default government" meaning my own country with its spurious electoral system. But a world-wide default government is the periodic world council of the G8 premiers, when it routinely takes fateful decisions over every-one's heads.

For domination in action, it is as if the aggression of nuclear warfare is ritually displaced on the populace thru the pollution threats from unwanted new nuclear plants.

The 8 July Washington Post reports the Bush administration will pay Russia billions "to dump spent nuclear fuel there." This agreement promises to be unpopular across the Russian political spectrum. American government protests, against declining democratic standards in Russia, look like a bad act, when they are evading domestic protests against nuclear power, by dumping its waste on a country undefended by America's constitutional tradition.

British attempts to reproach the Russian presidency were met by Vladimir Putin retorting that at least he didn't sell seats in the legislature. Peer nominations, who happen to be party donors, go on under the smug delusion that Britain is a democracy.

What is wrong with politics?

Ministers have become Fixers and the Prime Minister has become the Prime Fixer. Politics have become party wars between lobby alliances. Force and fraud, as against freedom and reason, have become institutionalised in an obsolete constitution. Public-spirited causes have found party politics so futile that they are mainly extra-parliamentary pressure groups. This disaffection is an index of the electoral inefficiency of representation, that allows party government to be hi-jacked by unpopular policies.

The whole political and economic system from the ground up needs opening to the general public. I've dealt with some neglected essentials, tho by no means all issues, such as campaign finance reform, that does not owe the parties a meal ticket. There's not much here about freedom of information, which is under renewed threat after being belatedly introduced. There's not much about parliamentary procedure and the balance of power between the branches of government, or a Bill of Rights. Others are more expert on these and other constitutional reforms.

A biased Horizon: when science is misused for propaganda.

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The early advocates of nuclear power promised it would bring electricity "too cheap to meter." As late as 1977, perhaps up to the eve of the Three-Mile Island melt-down, The McGraw Hill Encyclopedia of Science and Technology, which consists of authoritative articles by hundreds of experts, gave a table of probabilities for fatalities. They ranged from one in several thousand for motor accidents to one in a quarter of a million for tornados or hurricanes. But the rate given for nuclear reactors (over 100 plants) was one in five billion.

This was given as an average chance per year.

So much for the geological eras that life needs to be protected against radio-active waste.

There already had been some deaths kept secret and maybe many more.

On 13 July 2006, a BBC 2 Horizon program appeared on evidence challenging the risk of radiation exposure. The Chernobyl wild-life researcher himself said he had doubted his own findings. This means that tho his findings may be valid, they are puzzling in the light of other findings, and that scientists do not yet know all the ins and outs of their discipline. This research was not an occasion for jumping to conclusions.

Unfortunately, the program makers ran with the study to minimise the Chernobyl accident and conclude that more nuclear power might be desirable after all, allegedly to combat global warming. This was very timely political backing by "Science" with a big-s for the just published government energy review (2006). Instead of the Government becoming scientific, Science became propagandist.

Good information about the exact risks of radiation exposure remains desirable. But Horizon just took one side of the conflicting evidence and jumped to conclusions that will not promote the public image of radiation experts. The book, The Nuclear Barons, shows they have been discredited before for unreliable assessments. Mass abortions, carried out on women in the after-math of the Chernobyl explosion, may have been largely unnecessary. There are, however, many serious reports of evidence of mass deaths and illnesses, despite official suppression and cover-up. (See the Chernobyl 20th anniversary web page.) The truth is great and will prevail. We are still waiting.

Horizon didn't mention that the Soviet Union already had a disaster with radio-active fall-out from some sort of explosion at a nuclear waste dump. No public protection measures were taken till radiation sickness appeared. Mass evacuations and foodstuff destructions followed. Two years later, a physicist driving thru (advisedly at speed with windows shut) recalled:

"It was like the moon for many hundreds of square kilometers, useless and unproductive for a very long time, maybe hundreds of years."

A decade later, local doctors were still advising pregnant women to have abortions.

The Kyshtym explosion, at end 1957 or start 1958, was covered-up but the experience may have motivated policy at Chernobyl. A speaker on Horizon used the term "hysterical" to describe public opinion on radiation hazards. The term "radio-phobia" was also trotted out. So, it is perhaps fitting to recall what Peter Pringle and James Spigelman, in *The Nuclear Barons*, describe as "a hysterical reaction from Western nuclear advocates" in 1976, to news of Kyshtym.

In the future, mankind should not be putting itself into situations where it has to make marginal decisions on levels of radio-active fall-out. Human beings and their welfare should not be a secondary consideration to nuclear energy investments.

Having said that, the Horizon characterisation of the Chernobyl accident was just plain wrong. To quote from the wind-up statement: "Chernobyl was as about as bad as a power station accident gets -- a complete melt down of the reactor core --".

The truth is the consequences could have been incomparably worse. The core "melt down" may become an unstoppable temperature increase characterised as "The China Syndrome." American critics warned of uncontainable radioactive pollution, fancifully pictured as sinking right thru the Earth to China.

The Horizon program says most of the Chernobyl accident deaths were to the clean-up workers, citing 47. Unofficial sources have put

the death rates much higher among the thousands who were conscripted.

And Horizon doesn't refer to the heroic men who gave their lives, in containing the reactor melt-down, to prevent millions of people from dying from a nuclear holocaust. The 2006 BBC docu-drama on Chernobyl offsets the BBC Horizon misrepresentation. As the 20th anniversary docu-drama said: It was like 1941 all over again.

All Horizon could do was dismiss an alleged 56 deaths over-all, as "less than the weekly death toll on Britain's roads."

Never again! should have been the program message, if they'd had their priorities right.

The Horizon presentation of the Chernobyl accident measured the decline of radiation from the source. But there was no mention that it was pure luck that the radiation was not blown onto Kiev. One of the directions, it blew, blinded a Polish farmer, as The Sunday Times reported.

The balance of the official Chernobyl death toll was made up from nine deaths of children from thyroid cancer. You would think from Horizon that was it. However, Bernice Davison in The Telegraph, 22 april 2006, reported in Minsk

the new and large children's cancer hospital, which specialises in looking after "Chernobyl victims". For it was Belarus that bore the brunt of the radioactive cloud that poured north after the Chernobyl explosion...

Leukaemia and thyroid cancer rates (especially in children) in countries across eastern and northern Europe increased,..

28 countries are donating billions of dollars and limitless expertise to building a further new overcoat for this troublesome

building.

I had expected the reactor to be cordoned off and abandoned, but workers were being disgorged from buses outside, preparing to cross the road for their next shift. Hundreds of people - electricians, carpenters, doctors, hydrologists, miners, meteorologists, scientists, cooks and cleaners - work each day in the heart of the dead zone, still trying to contain and clean up the reactor...for 15 days at a stretch,...

The Chernobyl sarcophagus will remain radioactive for at least 100,000 years. And the world is having to slave to rebuild it after only 20 years. The most enduring of human monuments, the Egyptian pyramids were built 5000 or 6000 years ago and their civilizations are long forgotten.

Perhaps future legends will say that the earth's radioactive hot-spots were the work of certain conceited but malicious apes, who called themselves "wise" but were just too clever for themselves.

There is a danger that a Chernobyl could happen to one of India's many unsafe plants, described as disasters waiting to happen, in highly populated areas. The humanitarian relief problem could strain world efforts, as never before, in an age when mankind already can hardly cope with all the global emergencies.

This is virtually all India has to show for an enormity of misapplied effort and expense over nuclear power. That is fearful hazards and, of course, the bomb. This drove Pakistan to make its own nuclear bomb and test fire missile systems. And Pakistan's nuclear secrets were illegally passed on. So, India's bomb hardly enhanced national security. India's folly is not so different from that of the West, except that its poverty was less able to bear it.

So, peaceful nuclear power has been the road to nuclear weapons proliferation. The Third World wasted its substance on its own Cold War.

A recent Swedish research found a higher than expected long-term effect of Chernobyl on cancer levels. (Unlike Finland, Sweden has had the sense to go for renewable energies instead of fission energy.) The purpose of research is not about what levels of radioactive leakage a nuclear plant can get away with, so that investments are not threatened.

The Horizon conclusions on nuclear power might be likened to making some program, not to worry about ozone layer depletion, and not muzzle the chemicals industry, because low levels of ultra-violet radiation could be beneficial rather than carcinogenic. But it was scientists who discovered the hole in the ozone layer and action against it has become one of their causes.

Physicists, however, were responsible for discovering nuclear energy and some seem to feel they have to justify fission energy at least for peaceful use. Scientists, above all, as their progressive profession demands, should be able to admit mistakes. There should be no mistakes too big to admit.

Some energy alternatives.

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Taking subsidies and environmental costs - including the to-be colossal global warming costs - into account, relatively poorly invested renewable energies are far cheaper than fossil or nuclear fuels.

Costings conclusion of an e-mail letter by Aidan Constable to The Guardian, Life, 10 feb. 2005.

Costs of nuclear reactors were made to appear lower by an estimate based on supposed achievement by an 8th reactor in a series. Also construction costs more in wealthy countries. First of a kind design-cost increases, delays and cost over-runs are endemic to massive technical projects. Supposed performance levels are higher than those typically achieved. Also to be costed are risks from terrorism, nuclear weapons proliferation and accidents.

MIT estimated increasing nuclear power world electricity from 17 to 19 per cent by 2050 would mean nearly trebling capacity or 1000 to 1500 more plants. But known supplies of uranium only last another 85 years at 2002 levels of use.

Graham Sinden of Oxford universitys Environmental Change Institute has researched, for the Carbon Trust, a viable mix of alternative energies to meet continuous demand, Looking at past weather records, he estimated that the best mix was 65% wind, 25% domestic Combined heat and Power (dCHP) boilers, producing electricity as they heat water, and 10% solar cells.

Wind is most important because it blows most in winter and the evening when demand highest. The dCHP also produces more at peak times with combined demand for hot water and heating. Solar helps when the production of the other two are lowest.

The wind or solar generators need to be dispersed so that they produce electricity if wind is blowing or sun shining somewhere, if not always in the windiest or sunniest parts.

Sinden worked out the need for stand-by capacity would be reduced from 90% to just 11%. Sinden also points out that a combined wave

and tide system works better in meeting demand than tide alone, which is predictable but variable.

Altogether, Sinden reckoned that more than half of Britain's electricity could ultimately be derivable from intermittent renewables.

Oliver Tickell, The Guardian, Life, 12-05-2005.

Andrew Simms said:

A flexible, safe, secure and climate friendly energy supply can be delivered by renewables. A broad combination of wind, solar and geothermal power tapped into with a range of micro, small, medium and large scale technologies, applied flexibly, could more than meet all our needs.

Thomas Edison first built a power plant in 1882. He believed in a decentralised energy industry. In 1907, 59% of American electricity was from small scale generation: more secure supply less prone to black-outs, more energy efficient than a national grid. OFGEM says the National Grid loses power as heat that costs the UK nearly £1 bn a year.

The Network for Alternative Technology and Technology Assessment was that if ten million consumers installed 2kW of microgen solar PV or wind systems, they would supply as much power as a UK nuclear program.

The Ashden awards for sustainable energy (www.ashendenawards.org) judged two winners. ALI energy, a Scottish program of biomass heating, geothermal heat pumps, wind and solar energy, plans to make Argyll the first part of Britain entirely on renewables. The island of Gigha built a wind-farm, producing

75% of their electricity, which was the first community-owned and grid-connected.

Another award went to the Edinburgh-based Swift roof-top turbines. This is a small quiet wind generator capable of producing much of average house-hold electricity, and also supplying back to the grid. 4000 were ordered for 2006. The company is currently tooling up for mass production.

*Guardian Life 30-06-2005. Andrew Simms "Power to the people."
Co-author of Mirage and Oasis: energy choices in an age of global warming.*

A Russian wind turbine is being developed by scientists from the Makeyev State Rocket Centre near Miass. The blades, made of light glass fibre, move around twice wind speed, which is slow enough for birds to see, and almost silent. It looks like an egg-beater, is much cheaper than conventional design and of wider application, such as fitting to top of a house. The US company Empire Magnetics supplies the turbine alternators. It is being commercially developed with funding from US Department of the Environment.

Guardian Dispatch 25-11-2004.

Infra-red solar cells.

Edward Sargent and colleagues from University of Toronto, in Nature Materials, report creation of tiny semi-conductor crystals that can soak up infra-red light, half the suns energy, producing much more electricity than conventional solar cells. New nanocrystals as plastic solar cells are efficient and cost-effective. They are cheap enough to produce, large scale, and small enough to remain in solution such as

paint, or they could be contained in tarmac or textiles. One-thousandth of the US is paved with roads, which could supply all US energy needs if it could convert the sun's power into electricity. The new technology should be available within 10 years.

Guardian Dispatch 13-01-2005.

Stanford university scientists global wind map.

In Journal of Geophysical Research-Atmospheres, Cristina Archer and Mark Jacobson analysed wind speeds from around 7500 surface stations and 500 wind balloon stations to work out speeds at 80m height of modern wind turbines. They found 13% of sites, with winds of at least 6.9m per second. Wind could generate power enough for world energy demands.

At around 72 terrawatts (72 x 1bn watts) of power, this is equivalent to more than 500 nuclear reactors or thousands of coal fired plants. North America has greatest potential. Some of strongest winds in North America are along the North Sea. South tip of South America and Tasmania also recorded sustained strong winds.

Guardian Life Dispatch 19 - 05 - 2005.

Greg Barker the Tory environment spokesman was quoted by Sunday Telegraph, 21 May 2006, as saying:

... decentralised energy (DE)... may offer the best way of using the market to stimulate the necessary research, development and innovation required to...harness...renewable energy technologies...also...delivering energy to consumers in a far

more efficient method...

DE could offer a truly substantial reduction in UK CO2 emissions... also...enhanced energy security -- less susceptibility to power failure cascades, terrorist attack or energy dependence on other states.

DE implies local combined heat and power generators and household roof turbines, and perhaps solar panels, with surplus electricity sellable back to companies, as in Germany. Ultimately half of electricity would be locally generated rather than from the National Grid.

In the 2006 Energy review debate, Alistair Darling couldn't contemplate the prospect of winding down the National Grid. Again the attitude was, it had always been there and served well.

Jonathan Leake says:

Britain wastes more than half the power it produces through generation and transmission losses in the National Grid. Inefficient homes and businesses lose another 13%. Better transmission systems and insulated homes could reverse the growth in demand.

[PS. In 2015, visiting the EU, Nicola Sturgeon featured the need for a European-wide energy grid to maximise the utilisation of wind power, much of which comes from the North Sea turbines.]

The above reports on energy alternatives are doubtless only a tiny sample. The few innovations mentioned here don't all know about each other, so that there must be scope for greater integration and more effective use of renewable sources of energy.

The lack of resourcefulness and imagination of so-called leaders makes them look about qualified to work a tread-mill.

A moral of the nuclear debate is that you have to conclude that governments fight policies as they fight elections. The purpose, of our undemocratic voting methods, is not to represent the people but to win power. The purpose of policy debates is not to represent the public realities but the private interests that drive the parties. Politicians are not interested in the true representation of issues any more than they are in the true representation of the peoples judgment thereon.

The truly representative voting system (transferable voting) and two truly representative chambers, political and economic, are necessary, but not sufficient, conditions for bringing honest debate into political economy.

References:

In writing this page, I haven't taken my cue from the environmentalists, tho I'm interested to know just what they make of the latest efforts of the nuclear pushers and apologists. I felt an obligation to counter, as much as possible, further spoiling of the planet for future lives, who are defenseless against present recklessness.

"Twenty Years After Chernobyl - April 26, 1986."

This gave many more reports of Chernobyl-related mass deaths and illnesses. Recommended as an alternative to BBC Horizon condescension and complacency. Also there are many in-depth links and coverage of related issues.

"The International Campaign for Justice in Bhopal." Has a web site on lack of safety standards in the nuclear, as well as the chemical, industry. Bhopal, of course, was scene of the worlds worst chemical

pollution accident. Indias obsolete plants are among the worlds worst, with many serious accidents and near disasters, covered-up by government secrecy.

Peter Pringle and James Spigelman (first published 1981): The Nuclear Barons. The inside story of how they created our nuclear nightmare.

...exposes the deadly accidents, cynical cover-ups, ruthless profiteering, megalomaniac ignorance and wilful evasions of democratic control which characterise the nuclear industry.

Jonathan Leake, The Sunday Times, 27 november 2005: Now for Blair's dodgy nuclear dossier.

like its predecessor that was used to justify the invasion of Iraq, it will not be an independent inquiry but one led by members of Blair's own strategy unit...

July 2006; modified 27 july '06.

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Big Business leads New (for Nuclear) Labour to assault the future.

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26 July 2007.

A forum message, on the site of the Porritt report, said critics of nuclear power were 20 years out of date with the advent of thorium power. On following this lead, it turned out that this was a fifteen year project - according to its advocates, such as Prof. Egil Lillestol trying to persuade Norway. In other words, its advocates are perhaps 20 years ahead of themselves but it sounds better to make out its critics are 20 years behind themselves.

On that time scale, thorium power is no answer to what the consensus of scientists regard as the immediate problem of reducing global warming.

On the Treehugger site there is a discussion: Thorium solves global energy shortage? The thorium process is exempt from the melt-down problem and produces uranium too contaminated for the chain reaction of nuclear weapons. A discussion member told of how his father had tried to promote the thorium alternative but that the

industry wasn't interested, apparently because they wanted the nuclear weapons capability of uranium fission energy plants. The plutonium by-products were really end-products. Indeed, for human and animal life on the planet, they could be: The End.

There are several possible technical alternatives to producing thorium power. For instance, one design uses liquid lead that could pose a contamination problem but it may also have its advantages. From all the complexities, certain salient facts emerge. Thorium power will produce radioactive waste lasting 500 years. This would normally rule it out as a prudent energy source. But it could also incinerate plutonium waste, from conventional nuclear stations, lasting geological eras.

For this reason alone, thorium power stations probably would have to be built, provided they can reduce the stockpiles of the most long-lasting wastes. Normally, we wouldn't contemplate the production of 500 year-lasting ecological time "bombs," but that would be better than 100,000 year waste-storage problems. We do have the moral obligation to lift this curse on Earth's descendants. Thorium power appears to be a lesser evil that can mitigate a great evil. However, environmentalists will have to confirm that thorium power does have this benefit. In particular, only the appropriate designs for this purpose must be guaranteed.

Also environmentalists will have to oppose the expansion of conventional nuclear power, using the excuse that future thorium stations can clear up afterwards. They will also have to counter a new propaganda to promote thorium power, from a lesser evil helping somewhat to clear up a great evil, to a nuclear wonder solution.

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8-9 July 2007.

Now at last the New in New Labour stands for something: Nuclear Labour or poisoning the planet.

Investors wouldn't come forward if they were liable to the possible catastrophes from new nuclear power stations. The public, exposed to these unnecessary dangers, will have to pay for the calamities they may engender, for the benefit of artificially created private profits. And the industry gets special benefit of state security, being a vulnerable target, instead of everyone benefiting equally from the states duty to protect its citizens.

The Inter-governmental Panel on Climate Change recently played down a part for nuclear power against global warming. Moreover, any large scale program was prohibited by the unsolved problem of safe long term fissile waste storage and the increased danger of spreading nuclear weapons from more material produced by more nuclear power stations.

In July 2007, Al Gore, as unofficial world ambassador for climate change awareness, echoed the scientific consensus, in a BBC tv interview, that nuclear power has only a small part to play in combating global warming. If they can solve the problems, fine, he added.

Gordon Browns last budget announced a two per cent cut in income tax. When all the small print was taken into account, the reduction was denounced as a conjuring trick. Well, I'm no accountant but I guess that the fabled income tax reduction was window dressing to disguise the real reduction of two per cent in corporation tax, for his real bosses.

The prodigal chancellor, or "the credit card chancellor," as Michael Howard called Gordon Brown, formed a government in mid-2007 that entrenches the nuclear power lobby. In Blair and Brown, we have had not leaders but lobbyists. Browns brother Andrew is a director in the French nuclear industry. Blair did a deal with it, without consulting the British people about a fissile future.

A socialist point of view from Julie Hyland claims:

... any objective examination of the cabinet line-up and initial policies pledged by Brown makes clear what many believed impossible—that this is a government even more right-wing and directly subservient to big business than that which it replaced.

Tory spokesman Greg Barker commented "The nuclear lobby appears to have an arm-lock on New Labour..." when then planning minister Yvette Cooper created a quango, for big projects like nuclear power stations, to brush off local opposition. Her father Tony Cooper was recently chairman of the Nuclear Industry Association and is now Director of the Nuclear Decommissioning Authority. Her husband is another minister, Ed Balls, "close confidant of Gordon Brown." (Mail on Sunday, 20 May 2007.)

Mr Brown is a family friend of the former left-wing MP Martin O'Neill. Lord O'Neill has become chairman of the Nuclear Industry Association - it's like nuclear "musical chairs" between the Brown clan. I don't dislike the man. I abhor what he and his alleged "cronies" are planning. The Financial Mail (17 June 2007) reports: "it sends the clearest possible signal that Labour is now pro-nuclear."

Briefly before his appointment as Browns chancellor, so that it looked as if he were flying a kite, Alistair Darling displayed his ignorance of the alternatives to nuclear energy. He dismissed windmills as an "eyesore." That is a subjective opinion and typical of arbitrary rulers

to be so guided. Radioactive contamination is a sight more of a sore than a figurative eyesore and that is an objective fact, he chooses to ignore.

When he was Tory leader, Michael Howard announced, before the 2005 general election, his intention to start a new generation of nuclear power stations. It was wrong to try to impose this "Faustian bargain" on the public. But at least he was honest enough to admit his intentions. Blair and Brown New Labour hid the same intentions, till after the election, which is about as honorable as radioactive rape of the planet.

One of Browns outside ministerial recruits is Sir Digby Jones, who was chief of the CBI when Tony Blair chose, post-election, to publicise his commitment to nuclear power. Even by deceit, New Labour only managed 35% of the votes against a more disliked Tory party openly with a pro-nuclear policy. And Digby Jones was canting, about Blairs democratically elected government, against the Greenpeace demonstrators. To be sure, Mr Blair chose the most sympathetic audience in the CBI, private gain never having been strong on social conscience.

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Current Tory leader, David Cameron made a welcome change of direction towards decentralised alternative energies and conservations. But their manifesto looks like a compromise cobbled together with the radioactivists, rather than a coherent policy. Another former Tory leader, William Hague has sought to by-pass him by calling for cross-party support on nuclear power. So much for voter choice!

Tory policy priorities include security of supply, and a level playing field between different energies. But the fact is that nuclear itself is not secure, not now or ever. And the level playing field over-looks the fantastic amounts invested over fifty years on nuclear energy, which has still failed to provide security from its by-products.

It looks as tho the Tories remain divided and untrustworthy on this issue. Only the Liberal Democrats, which have a long record on green policies, definitely promise that they won't build more nuclear power stations. But they and the Green party are kept out of parliament by the wasted vote ruse of First Past The Post. With preference voting (and a proportional count) the public could also prefer candidates of any party who were either pro- or anti-nuclear.

[PS. After the 2010 general election we found what Lib Dem "No 2 nuclear power" meant: Nothing.]

If there was a financially balanced debate, and the voters had a fair choice, then the people could decide for themselves on all issues, including nuclear power. But this isn't the case. We have a black-mail system of voting, and lobby corruption of government. A democracy needs democratic voting system (PR by STV) and Equality of Lobbying by occupational proportional representation in the second chamber (which need not be in London).

We even know that fission energy has no long term future, only long term liabilities, because it will eventually be replaced by nuclear fusion energy, which doesn't produce harmful radioactivity.

Nuclear power as fission energy was fantastically over-rated and over-subsidised. Its misguided aspirations will not readily be abandoned, its losses will not readily be cut, no matter how criminally irresponsible the consequences for future generations potentially into geological eras of time.

The long-lasting radio-active by-products of fission energy were known to the scientists but not the politicians by the time the first atomic bomb was dropped. We do not know whether this knowledge would have changed the military decision. We do know that it does not change the decision of modern politicians and business men to amass radio-active waste without solving the long-term storage problem.

Ever-lasting poison is being dumped into the futures back-yard, because the unborn are helpless to prevent it. Indeed, anyone is liable to be dumped on, if they have not a robust enough constitutional law to prevent it.

The Mail reported (27 May 2007) "A dash for nuclear power...by the government...a committee of experts will decide where tons of toxic nuclear waste could be buried." Yet no long-term seal has been manufactured for anything remotely like the time spans involved before some wastes lose their harmful radioactivity. Contamination may do irreparable harm, after hiding away and ignoring disintegrating receptacles.

The Labour government has assured the British people that they won't have to take local nuclear waste storage, if they don't want to. This assurance can be taken with as much confidence as "Mr 45 minutes" other assurances. Translated, the "assurance" means: you'll have to be strong enough to resist. The weakest will go to the wall.

Someone, somewhere will have to take the rising tide of nuclear bilge pumped out by new stations if they are built. Already showing they are strong enough to resist, the Scots with their parliament have vetoed new nuclear power stations. But Scotland will surely come under pressure to allow dangerous waste deposits in their least populated part of the UK.

The Sunday Telegraph editorial of 18 february 2007, carried a caption "Insultingly consulted." Ministers consultation exercises on nuclear power and road pricing, afterwards made clear they would disregard the result. "Voters understandably feel that this is worse than not having been asked at all."

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Robber barons of big business are invasion-forcing more nuclear power stations like Norman castles of occupation on a hostile populace. This odious lobby looks like a co-ordinated attack by a government on its people.

Big Business Brown gathers round him a "business council for Britain" of plutocrats, rather as William the Conqueror gathered his baronial council of state that eventually became the political parliament. Perhaps in another thousand years, Browns business council will "evolve" an economic second chamber of government, for a notional equality of lobbying, from its Thameside radioactive swamp.

Meanwhile, the *Financial Times* reports that Browns accession to leadership

has spurred a rush of donations to Labour coffers with four businessmen, including leading private equity figures, contributing more than half a million pounds to the party in recent weeks.

Who said Gordon Brown couldn't do public relations? He has got Baroness Williams to be his nuclear proliferation advisor. She must have the easiest job in political history. All she has to say to Brown is

one word: Stop!

That's the only useful advice anyone can give to Gordo the great proliferator. Instead, he has made Shirl, the pleasant and acceptable face of his nuclear proliferation: a public relations coup.

Gordon Brown defended a new generation of Trident nuclear submarines by having us imagine that these would defend Britain from the likes of North Korea - North Korea?! If only Brown and co would missile to the other side of the globe and stop there. It must be admitted that we need defending from lunatic dictators but the universal possession of constitutional safeguards, such as democratic voting system and Equality of Lobbying, would better prevent the likes of Brown from polluting the future. Whereas, the universal possession of nuclear weapons will almost certainly lay radio-active waste to the Earth.

Oh yes, Browns constitutional reforms were careful to avoid any commitment to a more democratic voting system. And Equality of Lobbying remains science fiction. Brown reform proposals amounted to dumping the Blair ballast of constitutional wrongs. But Brown and opposition leader Cameron shied at the first opportunity to prevent a constitutional wrong by not lifting a finger against the Freedom of Information (Amendment) Act, by which MPs exempted themselves from the publics right to know of acts in their own name. Either leaders disapproval, with its power of promotion over selfish politicians, could have stopped easily this private members bill.

The parties and their leaders also avoid freedom of voting choice, from democratic electoral system, that could elect more representative MPs than the corrupt safe-seats do.

The alacrity of the move to replace Trident suggests the real motive is to stimulate the flagging nuclear industry, without public debate about defense and energy alternatives. Never mind that Britains

Trident secrets were stolen in the USA. What is that compared with the needs of business?

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The Nuclear Vested Interest and a Nuclear Winter.

The need to build up the immune system of the constitution against parasite politics.

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"Our solar-powered future"

The day, a report showed that the government neglected even to prevent council house plumbing from taking another life, the government announced more nuclear plants, whose products threaten the survival of human and all other developed life on the planet, while the energy minister insisted on their safety.

The Blair-Brown act waited till after the 2005 British election to force more nuclear plants, knowing its vote-losing unpopularity. This is unacceptable and I hope the British public will not be crushed under Browns nuclear steam-roller, now or henceforth, whatever deals governments make with the nuclear industry, over their heads.

The most important factor in the future of safe energy supplies was given in New Scientist, 8 december 2007. Their lead article was called "Here comes the sun. Our solar-powered future." Photovoltaic cells, to produce electricity from solar rays, are the current biggest investment in the world. The advance of research is such that, at its present progress, in few years, they will become commercially competitive with current energy sources.

Meanwhile, the British government is recklessly determined to impose the vested interest in more nuclear power stations, before sufficient opposition can gather to stop their disastrous ill-judgment for environment and economy alike.
There will be no excuses.

Not mentioned in that New Scientist article is the longer term prospect of a paint of miniature solar cells. Theoretically, if painted on all the roads it could satisfy US energy needs. This might take more or less as long to develop as it takes to build a nuclear power station.

Originally solar power looked limited to silicon cells with their theoretical limit of efficiency of thirty per cent. Efficiency levels have been improved from a few per cent to over twenty per cent. But other

kinds of cells have been invented with very high efficiency levels. The current problem is to trade-off efficiency with cheapness of mass production.

My first anti-nuclear page began by quoting an official US government report, over 50 years ago, saying nuclear power would never contribute more than 20 per cent energy production. The US should invest for an aggressive research into solar power that would be of tremendous benefit to mankind. Recently, American President George W Bush put by a miserable hundred and some million dollars for that purpose.

A previous 2007 New Scientist article reported on the dangerous disintegration of US radioactive storage, begun barely half a century ago but a threat for geological eras. The government has to waste billions of public money on indefinite radioactive storage up-grades. And this is just the richest country in the world, that can afford it.

Meanwhile, great industrial powers, like Germany and Japan, are intensively funding solar power research. New Scientist reported that in Germany domestic solar-power users get mandatory refunds from power firms for their surplus solar electricity supplied back to the grid. The editor urged that Britain adopt similar imaginative policies.

Parasite politics as alibi and bribe

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Britain is evidently run for the benefit of a nuclear industry caucus. Energy spokesman, David Howarth was the Liberal Democrat MP, I believe who remarked on Tony Blairs last months as premier, as being marked by a determination to flag-wave for nuclear power at every opportunity, usually with the remark that nuclear power is "back with a vengeance."

Blairs nose-thumbing exit seems to have puzzled more people than myself.

Was this a typical case of post-ministerial place-seeking a position on a board? Indeed, Mr Blair was criticised in the Press for taking a position with a firm benefiting financially from the Iraq invasion.

My later speculation as to Blairs nuclear propaganda was that he was diverting attention from the real driving force behind nuclear power - creating an alibi, as it were - for Gordon Brown and his government by nuclear caucus. Blair and Brown are old allies. They fell out when Blair out-stayed his welcome and Brown grew impatient to succeed him. So, to make up to Brown, Blair indulged the pet craze of a fellow control freak. Blair provocatively took the flak for an unpopular policy: nuclear power "back with a vengeance."

Blairs reward would be continued contact and influence with the man still in power. This is the network politics of a global elite remote from democratic accountability. Mr Blair actually excused his board appointment as being merited by his connections.

[PS. Blairs radioactivity followed directly on Browns brother being given a job with EDF.]

Gordon Brown was supposed to be a more serious politician than Tony Blair. But the lack of seriousness of Brown and Cameron was evident on the day of the momentous decision for more nuclear plants. Both party leaders were conveniently taking time off to grandstand with two of the countries top sportsmen. Not only Cameron can say he is "Blairs heir." This makes of publicity an alibi to distract from controversial decisions.

A group of scientists condemned the Brown government decision to build new nuclear power stations as undemocratic and possibly illegal. Also in January 2008, The Guardian reported a row about

"financial sweeteners" being offered to induce offers from private firms.

The energy minister has put no cap on the number of new nuclear power stations that may be built. This was a predictable consequence of the desire to profit by economies of scale. And I did predict this on my first page against the Labour governments obvious determination to change the 2003 energy review that decided on a renewable energies future.

Basicly the Labour government wants Britains energy production to go the French way rather than the German way. Britain has not been given the choice. As far as government might be concerned, big is beautiful, and the people are a prey to corporate feeding frenzies. It just so happens that Gordon Browns brother Andrew is a director in the French nuclear power industry. My second page, on nuclear power, also noted Brown friends and colleagues heading atomic energy authorities and smoothing (steam-rolling) the planning difficulties.

The only radioactive dump in Britain is near a village which has been offered a further bribe. BBC news mentioned seventy five million pounds bribe for taking low-level waste and a billion bribe for high-level waste-takers. It is right to speak of bribes in the context of generations unborn having to take the consequences of immoral dumping on their future habitats. When present generations take money to ignore future generations predicaments, that is a bribe.

It is barbaric to dump radioactive time bombs on the future. The nuclear industry may leave warning signs. They will only last so long. They may not be understood. There may not be anything that can be done about them. The situation is comparable to the terrorist planting of bombs. Sometimes there are warnings. Sometimes they are in time. Sometimes they can be acted on...

Who needs enemies, when you've got a government that puts the nuclear industrys meal ticket first.

It is one thing to honor the offices of government, it is another to honor uncritically the decisions of their frail incumbents. It appears that the English are still too prone to honor an authority, however ill come by. It is time England stood up for itself, as indeed Scotland resists more nuclear plants.

To build-up the immune system of the constitution

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I won't labor the point of the sub-title of this page: The need to build up the immune system of the constitution against parasite politics. It is my too-oft repeated theme, that the voters need effective choice of representatives and their policies, such as on energy. This would be provided by the single transferable vote for all official elections. STV is the democratic method and the scientific method of elections.

The motto is: Britain has half a dozen undemocratic voting methods where the transferable voting method would do.

Plainly, the series of campaign financing irregularities by politicians means that there has to be a limit on spending far beyond the means needed to merely present an honest argument that the public can make an intelligent decision on. It shouldn't be a propaganda battle like the Common Market referendum that allowed the business interests of the Yes campaigns bad deal (for the country) to spend twice as much as the No campaign. You couldn't get away from the smiling-family bill-boards.

The result was a comparable proportion of votes cast, for the two sides. The argument against disproportionate spending (above a reasonable publicity level for both sides) is decisive. If you don't need over-spending to win your case, prove it by not indulging, and so strengthen the legitimacy of a win. The correlation of greater spending with US presidential victories undermines their legitimacy.

Public polls continue to dismiss the impudence of the two-party oligarchy in claiming (involuntary) state funding for political parties. The two main parties glorify their parasitism as needed for "democracy". (They already claim twenty million one way or another. And it still isn't enough to over-come their unpopularity.)

Besides STV as scientific elections, an other constitutional protection against parasite politics would be two-chamber representation of the scientific relation between theory and practise. Vocational representation in the second chamber (also by STV) would bring specialist experience to test the political laws of the Commons or communities.

A vested interest, like atomic energy, by offering key posts and buying connections, may hi-jack the government, or indeed the two-party oligarchy, to force and prolong its failure on the nation. This is at the expense of other interests such as renewables research funding. Other interests in the second chamber, if democratically represented, would have a powerful platform to resist the nuclear steam-roller driven by the government.

Of course that would not suit the all-powerful executive. But people were long since sick of it, in both national and in local government with their winner-takes-all voting systems.

British government renewable energy sins of omission

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Germany, one of the great engineering nations, has decided to phase out nuclear power. France, which is not, is over-whelmingly reliant on it. Neither Germany nor France have been rich in energy. Even France made use of their tidal power resources by building a tidal barrier, some forty years ago. Britain has the best tidal power resources in the world and, in all that time, has built nothing.

Why bother when there were all those valuable petro-chemicals off-shore, which, to use as fuel, was like burning money? That was after the government allowed itself to be black-mailed with the Common Fisheries Policy to join the Common Market. The Establishment gave away and depleted Churchills "sea of fish" around an over-populated island that cannot feed itself.

In January 2006, the Carbon Trust identified, in Britain, 8 out of 20 possible sites in the world for tidal power stations. The Severn, Dee, Solway and Humber are ideal sites. Power could be provided 10 hours a day while the tide goes in and out. They estimated 3% of the nations electricity suppliable by 2020, and up to 20%.

With regard to other renewables, there was the odd hydro-electric station, after which, British government lay back exhausted of innovation. British government energy policy is guilty of sins of omission, neglect of renewables, and sins of commission, a centralised energy over-lordship and serfdom to radioactive containment.

British government, as in France, has been the most highly centralised in Europe. And it seems to be able only to conceive

energy policy on national terms. It's only recently that David Cameron talked of decentralising energy. Alistair Darling, spoke on the governments dependent energy review. (The Labour government wouldn't allow an independent energy review in case it gave the answer they didn't want again). Darling spoke of the national grid as if it was a national treasure. But it wastes some thirty per cent of energy in transmission, rather than meeting peoples needs locally and economically.

The centralists mistake grandiosity for progress, like some impoverished Third World dictatorship neglecting their peoples needs in favor of prestige projects. When the centralists even think about tidal power, it is in terms of a huge Severn barrage. This could meet 5% of the national energy supply but it would be both high impact and vulnerable. Tho incomparably better than nuclear power, a more resilient option might be tidal lagoons for the estuaries right round the British Isles supplied locally.

Power and policy-making is concentrated in the nation state, as if it is medieval and reactionary and beneath them to consider the modern technological version of the mill for producing local electricity from running water. But remote and over-bearing nationalism and inter-nationalism, such as the European Union, on balance, looks more of a menace than an assistance to ordinary people's needs.

And let's not forget the prematurely abandoned funding into wave power. This technology was called Salter's ducks. One can mention other possibilities like biomass and geothermal energy and so on. Green campaigners talk about an energy mix of renewables to cover all our needs.

The broad refusal to use Britains abundant gifts of nature makes nonsense of the energy minister John Hutton claiming that we have to use the resources we've got, as if nuclear was the only option. He

was speaking to Jon Snow on Channel 4 when the nuclear decision was announced. A few days before that, on The Politics Show, he did come out in favor of wind power turbines stationed round the British coast to supply Britains homes. The Independent reported this as a reversal of policy from giving to nuclear power what wind power could do without the waste that cannot be disposed of.

On the same show, the Tory spokesman insinuated that nuclear power, like wind power, might be subsidised. It sounds like a private fund-seeking party feeling the pinch from a disaffected public. The BBC presenter showed a previous film of him saying that nuclear power was only a method of last resort. The spokesman appeared to shrug off the embarrassment of one evidently not to be taken seriously. He didn't try to explain his turn-about nor contradict the presenters assessment that nuclear power was fine with the Tories, now.

Of course nuclear power has had fifty years of subsidies. The funding of wind-power and renewables in general is minute by comparison. The Liberal Democrat energy spokesman said Europe was far ahead of us on renewable energy research and that the British governments efforts were "pathetic." And nuclear power is still a deadly failure, thru its undisposable by-products, that threaten the survival of mankind and vertebrate life in general on the planet.

The government nuclear energy sins of commission

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Wind power remains expensive, tho, as John Hutton said, it might become less so. Nuclear power is incomparably the most expensive energy source because of the unwanted by-products and social

costs that economics, as distinct from ecology and evolution, selfishly ignores. Liberty depends on eternal vigilance. But radioactive waste will take away liberty with the eternal vigilance required for protection from it.

Defense is diverted from defending the citizens to defending the nuclear power stations and their offensive by-products. That is as well as being a hidden but massive military and police subsidy of nuclear powers unreal profits to their deluded investors.

And the mining of uranium for nuclear power is not carbon-neutral. While nuclear power absorbs huge resources, that could be better used than to contribute a minimal 4% against global warming.

The Scottish National Party coalition refused planning permission for more nuclear power stations in Scotland. Giving the impression of the government hiding behind the name Westminster, it was reported that "Westminster" (The UK parliament) called "Holyrood" (the Scottish parliament) "irresponsible." The government don't know the meaning of the word. The trouble is that the British executive dominates its legislature.

The executive has also ignored the third branch of government, the judiciary. When Gordon Brown became prime minister, without a contest, his first question time announced more nuclear power. This was despite a judge ruling that Labour government energy enquiry (called to over-turn a previous enquiry) had not properly consulted the public. The judge called for a further enquiry which the new PM was ignoring. Greenpeace sent him a solicitors letter.

SNP leader Alex Salmond said, in The Scotsman, Scotland had no need of nuclear electricity last year. (Before becoming first minister Salmond had proposed putting a million pound surcharge on the

British government transporting nuclear weapons in Scotland. - They are not toys.)

In October 2007, Dounreay, the Caithness nuclear plant was found to have about a hundred radioactive hot-spots on the surrounding beach. A clean-up plan involves a multi-million pound dredging of the local sea-bed.

In July 2007, an inquiry was held into the removal of body organs, from 65 workers, apparently without their families consent. They died between 1962 and 1991, and were mostly at Sellafield nuclear re-processing plant in Cumbria.

Thanks to the Scottish first minister, it makes a change to hear the British government having to bleat about someone being "irresponsible," because for once it is as powerless as ordinary citizens. It should do the powerful good to feel powerless. But it is doubtful whether they would ever get used to feeling the frustration that public-spirited people feel from being ignored over the well-being of all future generations.

In April 2006, 35 groups, including Greenpeace and the National Farmers Union urged the government to go green. They called for a 2015 dead-line for all new buildings to be carbon-neutral, to eliminate inefficient products from the market, cut energy demand and boost renewable energy.

Campaigners need to get together in such alliances to have a better chance of being heard. A Democratic Policy-making Alliance is needed, in particular, against the nuclear steam-roller driven by the Brown government, being waved thru by Camerons Tories. Now the Tories have nothing to lose vote-wise to a Labour party more nuke-crazed than they honestly were under Michael Howard, before the 2005 general election.

An Electoral Reform Society campaign asked whether we think there is something rotten with our democracy. During the week that Peter Hain was another politician to be investigated for campaign funding irregularities, the Brown government quietly dropped his party commitment to a referendum on proportional representation. BBC Newsweek mentioned this went almost unnoticed.

Nuclear Winter

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Gordon Brown's pronouncement, that a new generation of Trident nuclear submarines is needed against the likes of N Korea, is nuclear investors eye-wash. It has more to do with boosting a flagging industry, while the armed services have taken unnecessary casualties and are being stretched beyond their limits.

Try telling China and Japan and other neighbors that it is acceptable to retaliate against N Korea. The rush of nations to go nuclear, via the nuclear power back door, makes local nuclear war more likely.

Also, a question has been raised about the long-term stability of nuclear weapons. It is of the natural order of things for systems to degrade and become more error-prone. (The second law of thermodynamics.) There is a storage and maintenance and security problem, which is often just too much trouble and expense. But it would be irresponsible for world leaders to just hope for the best.

The astronomer Carl Sagan and colleagues researched the probability that a local nuclear exchange was enough for Nuclear Winter over the whole globe, a menace to all vertebrate life on the

planet. This would throw up a dark cloud covering the skies. For lack of sun-light, the crops could not grow.

Previous estimates had assumed that governments could retire to their bunkers, supported by the army, for about three months. And that when the fall-out washed out of the air and the water supply, it would be safe for them to come out and start their blunders all over again. An other factor left out was the massive increase in the use of synthetic materials. A global Bhopal would result from burning chemical substances released into the atmosphere.

Gordon Brown proposed a uranium bank to facilitate the dotting of more nuclear plants all around the world. These would be the most lethal kind of bank for war to invest in mankind's ending.

Escalations of a local conflict are also probable, as in the two world wars. Sagan pointed out that warring nations could not afford to leave others out of the destruction, lest they move in and take over what was left.

The world has to become a civil society, outlawing wars as gang muggings. The penalties for neglecting a robust inter-national law are too serious to ignore. Britain needs a national debate not Brown's nuclear business as usual. Indeed, we need an inter-national conference, as the Campaign for Nuclear Disarmament has urged.

5 February 2008.

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Response to Tory party commitment to more nuclear power stations and their fifty- year subsidised command economy failure.

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(The following is a reply to a Conservative party answer to a letter.)

I consulted, as advised, Conservative Party policy which said that nuclear power was conditional on it being economic or paying its way.

Gordon Brown pretended to do this but secretly subsidised it, caving in to nuclear industry demands. (As reported in The Guardian fairly recently.

By the way, I think misleading Parliament and the public should have been a resigning matter. What has happened to public standards of honesty?)

On Channel 4 tv, Peter Snow asked the EDF spokesman how they were going to finance nuclear power because the private sector would not. He replied they had their own resources.

That means the French state firms hand perpetually in the pockets of

the French taxpayers. Now they've got Gordon Brown to draw-on the British peoples pockets. This is to say nothing of the British government being in the pockets of the nuclear industry ("nuclear croneyism" as your party spokesman once so rightly called it.)

Judging by an authoritative reply to me, rather than what the Conservative web-site says, the Tory party fully intends to keep on supporting the nuclear crony government in dragging Britain down with Frances failed command economy in energy, which unfairly draws on public money, as if it were a bottomless pit, and stifles initiatives for sustainable alternatives.

That is the failed model that brought collapse in Eastern Europe.

To prepare us for this, there was an article in Financial Mail on Sunday, a few weeks ago, saying that British energy bills would go up to four or five thousand a year (allegedly) to pay for the climate-change-combating energy supplies from nuclear power and renewable energies.

This is misleading. A Total Energy Audit of nuclear power shows it neither economic nor carbon-neutral (as witnessed by the FRSC, PR Rowland, in letter to Guardian science supplement of the time).

American capitalists, Citigroup report, New Nuclear - The Economics Say No, warned against nuclear plants as "corporate killers." The free market won't invest in more nuclear power. Like Walt Patterson, they have learned from past lessons.

Only governments, spending other peoples money, are foolish enough to invest in the nuclear industrys high risks and low returns. People, who have had to earn their money, are putting it into renewables, especially photovoltaic cells research, which as New Scientist said, is "our solar powered future."

I would ask again the Conservative Party to discuss energy solutions with the veteran expert Walt Patterson, I've already linked to.

<http://www.waltpatterson.org>

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If the Tory party goes the Labour nuclear cronies way, it is predictable that more nuclear power stations will incur huge costs and very likely health hazards, and more than likely more emergency alerts on the scale of one to ten. The highest emergencies would end this little island as a nation. Even (officially) the highest, level 7, as at Chernobyl, created an area of ten-thousand square kilometres declared too dangerous for human habitation, tho much remained occupied and farmed. (Clive Ponting: A Green History of the World).

Meanwhile, scientific research in renewables will progress despite government by nuclear vested interest, seeking to stifle competition from wind farms, and probably imported from countries more enlightened than our own. People will naturally want to insulate themselves from the crippling nuclear costs and move towards energy independence by local micro-generation. Demand will also bring down renewables costs.

A further desire for political independence from the heedless Labour-Tory duopoly should be a likely side-effect. It is difficult to imagine how Britain could have been worse served than by this policy-united duopoly.

The Conservative party has copied the rhetoric of Liberal Democrats decentralised energy policy while following Labours centralist energy policy.

I've made some further comments, below, to this Conservative policy reply with its standard arguments.

The Tory statement: this is a political issue, not a scientific or technical one, does not admit of dispute and suggests that it does not stand up to the facts. A group of British scientists, the nuclear consultation group, are opposed to the steam-rolling of more nuclear power. They called it undemocratic and questioned its very legality (in a Guardian report, 4 January 2008).

They warn that questions about the risks from radiation, disposal of nuclear waste and vulnerability to a terrorist attack have not been addressed - even though the government was ordered last February to repeat a public consultation on energy supply, after its exercise was declared unlawful by a high court judge.

The comment that new plants would be safe from crashing aircraft is an assertion already repeated by James Lovelock. On the contrary, another scientist warned of the grimmest possibilities, for instance, in the release of Caesium 137 fall-out from Windscale/Sellafield, after a terrorist attack. (It was reported in the Guardian science supplement of the time.)

The reality is that a nuclear power plant goes into trauma if so much as a drill-hole in a pipe is discovered: a Florida plant went into red alert over this, without the slightest idea of who did the damage or why. (Reported on teletext).

I thank you (official Conservative policy) again for your viewpoint but my considered opinion is that it reads like a nuclear industry Press hand-out, because it is so lacking in supporting evidence or objective distance as to be no more than wishful thinking that these deadly serious problems will go away.

It's worse than a comic book fantasy. Even Superman is vulnerable to kryptonite.

The nuclear industry dare not admit to being fallible, because the possible consequences are too terrible to contemplate.

You Conservatives talk about radioactive contamination as just being one of many risks, mentioning amongst others, water contamination. But had the Chernobyl melt-down not been contained (every kind of expensive specialist, from the world over, is still working on it, full tilt, a quarter century later, as reported in a holiday feature in The Telegraph) a continental river system would have been made undrinkable with radioactive pollution for 12,000 years (as spoken in the BBC drama documentary).

By the way, all special interests should be represented in a second chamber of government, so they can combine to check those among them, like the fifty-year subsidised failure of a nuclear industry, whose only recourse is to lobby parties against the general interest.

Yours sincerely,
Richard Lung.
13 february 2010.

Postscript (15, 18 feb. 2010):

See also, Paul Brown: [Voodoo Economics and the Doomed Nuclear Renaissance](#). A research paper.

"...the shareholders keep taking the profits and the taxpayer foots the bill."

My favorite quote is from the Liberal Democrat MP, John Leech:

Nuclear Power Plants May Well Cost The Earth.

Source: manchester-libdems.org.uk/news

Alas, before his party lost its conscience to coalition.

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Journalist partisans for nuclear power.

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The betrayal of balanced debate.

I've never really shared the opinions of journalists.

But one has to put up with that.

No doubt it is folly to complain now.

This is just to put on the record my opinion of their folly and failure to protect the public interest. The conviction that they are simply not doing their job properly was brought home to me by their propaganda for more nuclear power stations.

They are the idol of the journalist Christopher Booker. And he has the run of the right wing press, The Telegraph, The Times, The Mail

and I don't know what else. I even heard him intoning reverently for nuclear power on a UKIP CD.

It just needed a wind turbine, in France, to catch fire for his conditioned reflex: nuclear power.

(You'd be really worried if a nuclear power station caught fire, and it has happened, even here, "Oh, island most blessed.")

When a wind turbine blade fell off, his colleague Peter Hitchens broke out into a carbon-copy ritual denunciation of wind power. One of his choice metaphors was of hamsters on treadmills.

[PS. On 24 september 2015, the BBC reported those wind turbine hamsters produced 25% of Britains energy.]

Booker and Hitchens and the rest of the anti-Green ranters were in step with the nuclear industrys wish for the government to cut back on this, the main energy competition unfolding at present (tho not in the future, given the progress of research into photovoltaic cells).

I also saw a nuclear energy spokesman denial of this threat to rivals (in 2010 in The Guardian). But he didn't deny, indeed made clear, that they would be handing the waste over for the government to look after (for the next few geological eras).

Hitchens column did a plug for "Chris Booker's" new energy book. Two other journalists for The Mail, Tom Utley and Max Hastings came out for nuclear power, falling on the "Green fanatics" like so many unqualified dominoes.

Before the end of 2010, two more Mail dominoes were spotted (note the pun), one of them Richard Littlejohn, following their party line against turbines. These authorities want to forbid wind-driven

turbines in favor of turbines driven by mass exterminatory nuclear fuels.

Our knowledge, thru the British reactionary Press, of the Greens today - stereotyped as “beards and sandals” (for instance in about the first entry of The Mail science blog so-called) - is a bit like our knowledge of the Gnostics in the classical world: we know of them only thru the attacks of the censorious established church.

The worst of it is that you don't see the case made by experts (Walt Patterson and Jonathan Porritt come to mind) for alternative energies and conservation and the phasing out of nuclear power. In 2010, Greenpeace brought out such a plan but I haven't noticed the mainstream media giving it any attention.

I think they are reduced to local supporters trying to engage small audiences.

In The Mail, blog moderators seem indistinguishable from censors, as to my criticisms against atomic fission.

Quite apart from anything else, such ignorance is annoying in its arrogance.

The Guardian has its intemperate nuker in George Monbiot. At least since The Independent was rescued by new owners, there have been pro-nuclear editorials. And a particularly feeble assessment of a so-called consultation over a new nuclear power station.

One comment will give the tone: on top of everything, the public were concerned to hear that a wind turbine might fall on the existing nuclear power workers there.

The last straw, indeed!

The pro-nuclear Ben Goldacre assessed an EDF consultation as that if you scare people enough with unemployment, they will be pro-nuclear.

The worst example (that's been admitted) seems to be The Sun, whose owners told a former editor to leave out the Liberal Democrats, who were the one significant and most vociferous force against more nuclear power.

That is until they joined the Tories in coalition in 2010.

A Sky News interviewer kept prodding the new energy minister, Chris Huhne, about nuclear power, including subsidies for it. Huhne had to point out the obvious that nuclear power has been on the go for a long time and didn't deserve subsidies. Wind turbines were an infant industry, and therefore given some help to get on their feet.

At the Lib Dems first party conference in power, for the first time, the lobbyists were there in force, setting out their stalls. Whatever happened to integrity (not to mention economic democracy)?

The Tories, Labour, UKIP, the BNP remain zealously pro-nuclear.
[PS. Soon to be joined by the Lib Dems in coalition with the Tories]

As to the scientific community (I'm not talking about the odd zealot), who forgot their doctrinal neutrality to become the false prophets of a nuclear utopia, that turned into a Frankenstein monster, what happened to them?

Each nuclear power station produces thirty tons per year of extremely high grade nuclear waste, says Michio Kaku (Physics of the Impossible).

Between the Two Cultures, of the humanities mandarins and the scientific neutrals, to quote Eldridge Cleaver: Those who say, don't

know, and those, who know, aren't saying.

Abandoning standards of honesty.

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The media in Britain are what they have become in America: too much centralised control by reactionaries who can fabricate with impunity.

One national broadcaster even won a court case to the effect that they didn't have to tell the truth, because it was not enforced by law, only offered as a guideline.

This degradation set-in when “a real media man,” Ronald Reagan took over the White House. In 1987, he abolished the Fairness doctrine, that required broadcasting both sides of a debate, including controversial issues of public interest. He vetoed the attempt of Congress to maintain the status quo of fair play.

So, here was a man, elected on a platform that “big government makes little people,” who made sure that big business makes people small. Deregulation of local autonomy led to corporate centralisation of the media as just another business without public obligations. Information monopoly misleads and closes-in the publics horizons. A notable result was the compliance of US broadcasters over the second Iraq war, ignoring any dissenting voices.

Judging by Noam Chomsky, veteran critic of the Vietnam war, the American media are as conformist as the British. Here, the simulated battle between Left and Right goes on like the big-enders versus the little-enders, Jonathan Swift imagined in Gullivers Travels. Their partisan propaganda merely serves the ends of a survival tribalism.

Life's a scramble and it will be for hundreds of years yet (HG Wells).

We could start going in the right direction again with good and wise laws against lying, stealing and cheating. Ending cheating, for example, by replacing fraudulent with genuine election methods. Laws against lying (the Fairness doctrine in broadcasting) and laws against stealing (like the Glass-Steagall Act), respectively repealed by Presidents Reagan and Clinton, should be re-instated.

Consumer advocate Ralph Nader called President Barack Obama loan guarantee for more nuclear power stations "a monumental mistake."

The complaint was made that fairness was an excuse to harass the Right. No doubt they would not welcome a more even playing field. In other words, nothing must impede the darlings of fortune. Doesn't everyone just snatch their opportunities, anyway? No doubt, fairness is too often a mirage. Unfortunately, such a mind-set brings countries to their knees, as the 2008-9 credit crunch has demonstrated.

22 december 2010. Minor addition, 2 january 2011.

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The determined dishonesty of atomic energy.

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After the 2011 Japanese tsunami destroyed the Fukushima nuclear reactors, I wrote no more essays against nuclear power. Events had spoken louder than words!

This failure did not chasten the nuclear lobby and its supporters. Their most extreme propagandists perversely and disgracefully proclaimed that now they knew nuclear power was safe. (For instance, at least a couple of journalists, including a blogging science teacher, in The Mail, and Monbiot in The Guardian.) This was only days after the disaster, when it was not possible to know the truth.

If only arrogance could keep nuclear power stations safe, humanity would have no worries about them.

Of course, that was the purpose of the arrogance, to stifle legitimate worries of the populace about nuclear power. The Guardian Comment is Free was full of it.

A similar unteachable attitude of the British government and its officials was exposed, when The Guardian obtained emails that the energy department was anxious to play down the Fukushima disaster, to prevent adverse public opinion challenging its immovable

intentions to build more nuclear power stations in Britain. That is to say in England and Wales, because Scotland won't have them.

Angela Merkel was going to go back on phasing out nuclear power in Germany, until the Fukushima crisis made her change her mind. She has an educated interest in science, lacking in the British cabinet and legislature. Perish the thought that a British elective dictatorship could ever be induced to be guided by the evidence of events! The Titanic is unsinkable!

For my own part, before the Japanese tsunami, I already had made my views known, presciently, as it turned out. Yet I would never be an expert and there were plenty of others, much better informed, who I could only trail along after, as a secondary or tertiary source.

Moreover, the evidence remained unclear for the extent of, and potential for greater harm from, Japan's nuclear tragedy, in the wake of the tsunami misery. For instance, in 2015, Japanese television reported that the extent of radioactivity, escaping into the atmosphere, had been under-estimated. And that says nothing about leaks and flushings of radioactive contamination into land and sea.

However, I have picked up a few salient points, from both supporters and opponents of nuclear power, as well as general reading, which are perhaps worth recording here.

The first atomic pile or nuclear reactor was built to understand how a chain reaction worked, in order for the Manhattan project to know how to build an atomic bomb.

As far as nuclear energy was concerned, from first to last, civilian needs were subordinated to military objectives. Indeed, the former has typically covered for the latter. Nuclear power has been the spin-off and accessory to nuclear weapons.

This was certainly the case in Britain, where the mess from the fifties nuclear weapons scramble still has to be cleared-up, in Sellafield, if it can be. It is suspected to be the case in Iran, secretly and illegally helped by Pakistan. Enenews alleged that the US presidency secretly and illegally armed Japan with nuclear weapons under cover of its nuclear power program.

I read on Comment is Free that even a scientist, who designed the atomic pile, for military research into destructive potential, knew this was not the optimum nuclear reaction for peaceful civilian energy purposes.

India has large deposits of thorium and has researched this nuclear reaction option. It was alleged (on CiF) that this was stalled by the Clinton administration offering favorable terms with its own uranium fission reactors.

Whether thorium power, or other not too offensive nuclear options, are feasible remains unproven. I know by my own specialty of election science, the self-interested wilfully ignorant human determination to corrupt and degrade even the obvious. So, for all I know, there may be a niche for a fairly civilised form of nuclear power. Or there may not. But private fortunes should not be begging governments to hi-jack public funds for its research.

If a peace-friendly nuclear power could be developed, with minimal levels of toxic waste, at least, it would undermine the fraudulent excuse of governments claiming to want (uranium fission) nuclear power just for peaceful purposes.

In any event, nuclear power has been the most outrageous example of private profits at social costs. It is so dangerous as to be uninsurable. The public pays for the contingency of being lethally irradiated and made more or less terminally ill. The public pays, from

here to eternity, for the nuclear waste disposal problem, which remains unsolved.

If “the world is full of half baked solutions,” as a letter writer to The Guardian said, talking about Internet banking, this “solution” isn’t even half baked.

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The hubris of scientists promoted their own prestige in a nuclear utopia of unlimited energy. Even the equable Arthur C Clarke was caught up in it. (Greetings, Carbon-Based Biped! Collected essays 1934-1998.) Such was the craze for “atomics” in the 1950s, made possible by suppressing the inconvenient truth that this unlimited energy brought with it the potential for unlimited sickness.

Governments were signing up their peoples to a devils bargain, without their consent.

Harold Macmillan suppressed news of the Windscale reactor catching fire. Only the foresight of a chimney filter, derided as “Cockcroft’s Folly,” prevented a disastrous escape of fall-out. As it was, contaminated milk was disposed-of and cattle slaughtered.

Energy Minister, Anthony Wedgwood-Benn parroted the phrase that nuclear power would be “too cheap to meter.”

When I mentioned this, my veteran left-wing friend, Dorothy Cowlin recalled that she had found it hard to forgive him for that.

Investigations, into the atomic bombings of Japan, revealing that they resulted in the whole range of cancers, were kept secret. (Stated in a 70th anniversary tv program, on the bombing of Hiroshima.)

Alice Stewart discovered that x-rays of unborn children induced fatal cancers. This unwelcome news did not make Stewart a household name, as it should have done.

When an overseas colleague enlisted her aid, in researching the health of nuclear power station workers, the American government stepped in to suppress the exercise. (Gayle Greene: Alice Stewart, the woman who knew too much.)

When the Swedish parliament voted her the alternative nobel prize, the British embassy didn't even give her a car-lift from the air-port. She might as well have been a non-person, as far as the Establishment was concerned.

Despite the deficiencies of this after-word, as well as the previous essays, I hope I have said enough to justify the conclusion that nuclear power has been a stalking horse for nuclear proliferation, endangering the health and happiness of life on earth, thru subordinating civilian needs to military objectives. Nuclear power has not been possible on a commercial basis, independent of public funds insuring its disasters and catastrofes waiting to happen, and disposing of its chronic waste.

Nuclear power has been dishonesty personified. Its public relations, employing friends in high places, suppressing evidence on radiation sickness, and dumping its hyper-pollution on future generations to solve or suffer.

When extravagant promises of "atoms for peace" (perhaps the biggest threat to life on earth) were no longer remotely credible, the tyrants excuse of necessity (against climate change) is made.

No mature government by democratic consensus would inflict this bitterly opposed burden on the coming generations.

Today (21-09-2015) George Osborne announced the start of a nuclear deal with the Chinese government (as well as the French state-owned EDF). He claims that nuclear power is low carbon emitting, which, no matter how many times it is repeated, is still false.

As before mentioned, this fraud is exposed by a Total Energy Audit, specified by PR Rowland, of the whole production process from uranium mining to waste disposal, including all the facilitatory expenses.

British government is a typical Stalinist enslaver to white-elephant prestige projects, above all, the tarnished glamor of atomics. This unamiable mind-set has been characterised as "nuclear fascism."

The biggest health benefit and energy economy would be thru really good insulation standards in buildings. A big coalition called the Energy Bill Revolution promotes this for every home. The Tories singularly neglect it, all the better to exploit their energy serfs, in a nuclear feudalism of centrally controlled power.

But disable the center and the whole is made helpless. That is why the US military developed the internet for decentralised communications.

Whereas decentralised energy, where everyone can get by in healthy insulated homes with their own renewable energy generators and storage, is the future that beckons to free democrats.

In the 1950s, a comprehensive expert energy report, to Pres Eisenhower, predicted correctly that nuclear power would never make more than a minor contribution, and that the future benefit to mankind lay with an aggressive research into solar power.

More than half a century later, David Attenborough spoke for a new Apollo project. The Kennedy presidency marshalled the nations

resources to put a man on the moon within the decade. Likewise, an international fund could enable a doable project to collect and store enough solar energy for the worlds needs. Just a tiny proportion of all the radiation from the sun, that daily reaches the earth, would leave no need for fossil fuels and their climate-destabilising pollution.

He might have added, removing the risk of nuclear power contamination, rendering the planet more or less uninhabitable.

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Some women scientists who *should* have won nobel prizes.

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Neither feminist nor "masculinist."

I was told I was "condescending" about a woman being well-read in popular science. It was a reminder how sensitive women are, with regard to being treated as intellectual equals. My reply was that, in my own readings of popular science, I had come across three women scientists, who should have won nobel prizes.

I can think of four. (I came across more later, without looking or taking notes.) That being the case, it is probably only the tip of an iceberg of hidden injustice to the scientific abilities of women. This is not meant to be a comprehensive case for womens intellectual rights. It is just something I noticed a little of, without even looking for it. Nor is it meant to belittle the present attempts being made in education, to encourage girls and young women to become scientists.

If words are to mean what they say, I don't believe in "feminism," as a one-sided sexism, any more than "masculinism." It is arguable that we now have a "feminist" culture in this one-sided sense. That is to say an excessive passivity towards restitution for people who are wronged by crime or civil injustice.

What, you may ask, is masculinism? Perhaps it is shown most blatantly in many old action movies. All the aggressive competition, all the fighting, racing, chasing, all the courageous acts are left to the men. The womans role is to stand in the wings, in a sort of agonised dither, while the men slug it out. She then falls into the arms of the victorious male in a swoon of admiration and adoration.

In my mis-spent youth, at the cinema, I remember being exasperated by this conventional view, which I now call masculinism. Sometimes, the script was enlivened by a spirited woman. But I learned to expect she would be the one with the tragic ending, while the passive or "womanly" woman was the one who lived happily ever after, with the hero.

Of course, not all the old action films were like that. One, that was not expected to become a classic, was a Western, which everyone has seen, *High Noon*. Here, all the town folk shun the sheriff, asking for help against a gang, gathering to gun him down. One man tries to make him change his mind. But only makes things worse, by fighting him.

Left on his own, the sheriff, Gary Cooper, playing a fine manly role, is surprised from being reduced to tears, by a boy bursting into the office. The boy's offer of help, against hardened killers, has to be refused.

Meanwhile, the sheriff's fiancée is leaving on the train. A Spanish woman (with her nationality's belief in family loyalty) tells her she would never leave her man. The fiancée returning, with shot-gun, is true to life, in that her presence both helps the sheriff and makes him vulnerable thru her.

Lise Meitner.

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Shortly before world war two, Lise Meitner worked out a process of nuclear "fission" leading to the possibility of a chain reaction and the unleashed energy of an atomic bomb, on the basis of the famous mass-energy equation.

She was sent to the United States with this information because it was too dangerous to send the news by post.

The secrecy, of research that would make lucrative Nobel dynamite seem inoffensive in comparison, prevented the nobel committee from hearing about it in a hurry. But that has never been a bar from scientists receiving eventual recognition.

In fact, Einsteins nobel prize was delayed, till the evidence for his revolutionary ideas was more assured. And he never did receive the prize for the theory of relativity, with which his name is associated.

When Niels Bohr first heard the Meitner explanation, he exclaimed, to the effect, what fools they had been. This seems a rather ungracious acknowledgement. After all, you could say about many discoveries that they are easy -- when you know how.

Meitner worked with Otto Hahn for thirty years. Like Bohr, Hahn was a nobel laureate. In his autobiography, he decried some ill-informed journalism, making extravagant claims for what Lise Meitner was working on. Again, it struck me as curious that Hahn should choose to refer to his female colleague, in this passing and negative way.

I make no claims to understand the states of mind of these foremost scientists with regard to Meitner. However, there is historical evidence of a male chauvinist attitude that women are no better than they should be. Boys may be brought up with the belief that *they* are going to be the ones who are going to do great things in the world. In quite recent years, I heard a woman, of rural background, say her daughter was "only a girl." And the same expression, recently, from a boy on tv. Tho, that was good-humoredly challenged.

However, we can safely assume that Bohr sparring partner, Albert Einstein thought Lise Meitner deserved a nobel prize, because he pointedly refered to her as "the German Curie." He was trying to

harness German national pride to her cause. Like her, he was a German Jew: he from Switzerland, she from Austria. And both were forced, by Nazi racism, to become emigrés.

Madame Wu.

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Implicit in the conduct of physical experiments are certain assumptions. When spelled out, they seem no more than common sense. It is thought not to matter to the out-come of experiments when or where they are conducted in space or time, *as such*. Likewise, it was thought that an experiment that was seen, as if in a mirror, could not be distinguished from direct observation of it.

This was a mirror image (or "parity") conservation law of physical experiments. Up till the twentieth century, only two forces of nature were known, gravity and electro-magnetism. (Electric and magnetic forces received a unified treatment in the nineteenth century.) Tho, Isaac Newton anticipated there might be more forces of nature.

Two more were discovered, as it began to be realised that atoms were real but not the basic indivisible building blocks of matter. The "strong force" bound the constituents of the atom. The "weak force" was associated with the spontaneous disintegration of certain of the unstable heavy elements in radio-active decay.

By the middle of the twentieth century, examples of the weak force interactions, posed a dilemma, involving either one "strange" sub-atomic particle that violated parity conservation, or two such particles, with apparently identical properties.

The physicists Chen Ning Yang and Tsung Dao Lee proposed experiments "to determine whether weak interactions differentiate the right from the left." The first team, to carry out these tests, was headed by their friend and fellow Chinese-born American, Madame Chien-Shiung Wu.

Martin Gardner described her, in *The Ambidextrous Universe* as:

widely regarded as the world's leading woman physicist. She was already famous for her work on weak interactions and for the care and elegance with which her experiments were always designed.

This compliment reminds me of Elizabeth Barrett being called the worlds greatest woman poet.

In other words, she was very good -- for a woman!

Martin Gardner says:

Madame Wu's experiment provided for the first time in the history of science a method of labelling the ends of a magnetic axis in a way that is not at all conventional. *The south end is the end of a cobalt-60 nucleus that is most likely to fling out an electron!*

It was pointed out that but for Yang and Lee telling the experimenters what to do, the experiments could never have been performed. This tacitly explained why the two theorists got the nobel prize but not the leading experimenter, who verified the violation of parity.

But experimental ability is also a gift. Ironically, Yang was legendary for his maladroitness anywhere near a physics lab. (Where there's a bang / There's Yang.) This is in no way meant to be disparaging of the man, who went onto further great things in mathematical physics -- the Yang-Mills gauge-field theory.

It is merely that experimental ability is equally to be respected as theoretical ability.

And the nobel committee recognised this, for example, with regard to the electro-weak theorists -- and their experimental demonstrators (as led by Carlo Rubbia, at the CERN laboratory, in Switzerland). This was the theory that gave a unified explanation of two of the four known natural forces, the electro-magnetic and the weak forces.

Madame Wu made just as epochal a result in the twentieth century history of physics. In justice, not to mention courtesy, a nobel prize should also have been hers.

Rosalind Franklin.

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James Watson, telling of the search for the genetic code, *The Double Helix*, starts by saying only five people in the world mattered, in its discovery. At any rate, one of these was the crystallographer, Rosalind Franklin.

Linus Pauling was known to be on the warpath for his third nobel prize. (He did eventually win another -- for peace, tho.) His son came over to Cambridge. With American generosity, he sided with Francis Crick and Watson, in their race to beat his father.

When Pauling came out with his model of a triple helix, it didn't seem quite right. As Crick said, nature does things in pairs.

A recurring feature of the story was going round to take another look at what "Rosie" had done. They didn't dare speak to her in such familiar terms, however. And Watson relates that she greeted their double helix idea with a womans fury and scorn.

In a later edition of his book, Watson sympathises with her for the difficulties she must have faced, as a woman in science. She was to die young of a painful illness, bravely continuing her work till the end. Her notebooks show she was moving towards the double helix explanation.

From Watsons account, one certainly gets the feeling that the superb quality of her X-ray diffraction studies were Crick and Watsons window on the problem.

In *The Physicists*, C P Snow said Rosalind Franklin got "a raw deal." She should surely have shared that nobel prize.

Jocelyn Bell.

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Jocelyn Bell was the first to discover an astronomical object, that was to become known as a pulsar, short for pulsating star. This class of things were later to be identified as neutron stars. Like black holes, the possibility of their existence had been theorised, but few had believed in them.

Apart from black holes, neutron stars are stars in their most catastrophically collapsed state, occurring in super-nova explosions. This produces an enormously increased spin, the figure-skater effect, named after the increased spin of a skater after she draws in her arms. With it, goes a greatly increased magnetic field, whose poles may differ from the axis of spin. The former is whipped round eccentrically, by the latter, drawing in nearby charged particles to produce a rotating beam, a light-house effect.

The regularity of this pulsed radio signal made the Cambridge team, led by Anthony Hewish, think, at first, that their new large array radio telescope recording was artificial. However, only the worlds best atomic clocks could keep such accurate time, so it was no human interference.

An extra-terrestrial contact was next thought of -- LGM or little green men. But then Bell found another such signal.

In his book, *Perfect Symmetry*, Heinz Pagels said of Bell:

It was (Hewish's) extreme good fortune to have Jocelyn Bell-Burnell, a twenty-four-year-old graduate student, on his team. Examining the output of the antenna which swept the sky as the earth rotated, she observed "a bit of scruff" -- a distinctive radio signal -- coming from a particular spot in the sky. It would be rather easy to disregard such a signal as nonsense noise. The actual output of the antenna was recorded as a line trace on a paper roll, and the "bit of scruff" was just some short jumps in the trace on hundreds of yards of paper, every inch of which was examined by Bell.

A month later, she saw the signal again and soon thereafter analysed the "scruff" in detail. She saw that it consisted of periodic pulses about one second long.

Some people thought Jocelyn Bell should also have had a nobel prize. After all, people think the idea is that the prize should go to the person who first makes a first class discovery. And it does seem to me that they are right that she should have had a share in the glory at Stockholm.

But for her, some other radio astronomy group could well have snatched the prize first.

Also, it was a lost opportunity to write in the sky what a diligent

young woman in science might achieve -- and be fully recognised and rewarded for.

In a recent interview, broadcast in 2015, Bell-Burnell regarded missing the big prize, as an advantage, because it would have put-off all the subsequent awards heaped upon her.

Alice Stewart

Post-script (2015)

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Other examples of disadvantaged women scientists, because they were women, impinged on my later attention. Emmy Noether has a theorem named after her on the necessary relation between symmetry principles and conservation laws. This concept is at the very foundation of modern physics. (While it is true that the nobel prize doesn't include a mathematics category.) A German university only let her become part of the faculty, because David Hilbert backed her.

And then they didn't pay her! What a practical comment on male condescension!

There were two pioneer women astronomers, one of whom Hubble wouldn't let use the great telescope, to anticipate his findings. That would be Henrietta Swan Leavitt. A classic case of boys not sharing their toys with girls. Sharing is what man remains poor at.

The Hubble telescope? The Hubble-Leavitt telescope, methinks.

A century later, right into our own times, women scientists were still getting a raw deal. Alice Stewart should be a household name. I had

never heard of her. Her curiously unfamous, and belatedly acted-upon discovery was that X-rays on unborn children are fatally cancer-inducing.

Adopting a low threshold against radioactivity could not guarantee against harm. This obviously raised questions about nuclear power. The US government was desperate to prevent Alice Stewart ruining the reputation, that nineteen fifties science propaganda had built-up for the nuclear utopia, just as she had spoiled the reputation of the medical professions favorite toy.

I once had the misfortune to come across a professional review of the biography by Gayle Greene: Alice Stewart. The woman who knew too much.

The critic started by saying that he wouldn't dwell on her early career.

This was most convenient for his debunking exercise, because her diagnostic abilities were honored and recognised as out-standing.

He conceded that X-rays are pre-natally carcinogenic. There was no longer any use in trying to shut the stable door after that horse had bolted. The rest of his comments might be described as a war of attrition on her subsequent work. Her statistician colleague used dodgy techniques. (No demonstration of that conveniently floated claim.) Her biographer wasn't a scientist. (Actually, Greene let her subject speak for herself.)

The article writer may have been a scientist but his objective knowledge was of how to follow the nuclear party line, not any desire to share in Stewarts attempts to know the precise extent of this undoubted menace.

The Swedish parliament awarded Alice Stewart the alternative nobel prize, since scientists couldn't bring themselves to give credit where

it was due. The British embassy didn't even give her a lift from the air-port. She was not so much given the red carpet as brushed under the carpet, like her social health research.

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Murray Gell-Mann: The Quark and the Jaguar

Some themes illustrated from electoral methods.

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Introduction

Murray Gell-Mann (published by Little, Brown and Co in 1994) tells a little about his personal life, mostly his youth -- tho there are a few genial anecdotes about colleagues. This is just as well, because as CS Lewis said: He'd never read an autobiography yet in which the

early years weren't by far the best. Lewis appears to have discovered a law of nature, or human nature. Gell-Mann is a student of both.

Gell-Mann, on "Quarks and all that" echoes "1066 and all that," as if we would laugh-off his most famous discoveries as ancient history. In fact, he gives a typical account you might read in other popular physics books.

He is much better on current research to demystify quantum theory. The paradox of Schrodinger's cat is laid to rest (tho attempts may be made to revive it).

Complex systems.

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Nevertheless, the focus has changed, from: what are the basic parts of the world? to: how does everything fit together so it works properly? Gell-Mann helped found the Santa Fe Institute concerned with the general properties of complex systems and their emergent features that make successive chemical, biotic and social systems irreducible wholes.

The Quark and the Jaguar sets out to define complexity. Complexity is in the observer and the observed. Observations are most complex when they are not so apparently random, that no rules can be abstracted by the observer, and when the observations are not so regular, that they can be summed-up in a simple rule.

Consequently, the skill of observers is most tried, as themselves "complex adaptive systems," when they have to distinguish most

carefully the essential patterns in the data - the sensory "signals," if you like, from the random noise. (That is, if you consider ones perception of the real world rather like receiving a radio signal, so one has to fine tune out the interference to its message.)

The "noise" could be superstitions caused by ones conditioning to chance associations between events that have no rational connection. However, Malinowski anthropology and Jung psychology have impressed on us that apparently silly customs may have a ritual value for the integration of society and of the personality.

No doubt much of the paranormal is credulous. But I don't agree with Gell-Mann, in his throwaway dismissal of "psychic detectives." They are the subject of tv programs (writing in 2015) which sometimes offer no evident cause for the psychics "inside informatio." The police are scientific investigators (in a democracy). If they find such people useful at times, that is surely being practical rather than dogmatic about things we don't understand.

Anyway, Gell-Mann, on complexity, may be illustrated by voting methods. Candidates first past the post in marginal constituencies depend largely on chance factors to win. "There is no greater gamble than a British general election," admitted one devotee of the simple majority system. An opposite fault applies in the safe seats, where results are too determined. An agent boasted he could put up a pint pot of beer in this constituency and still get it elected.

The random effects of marginal constituencies and the pre-determined effects of safe seats are both examples of low "effective complexity."

The voters are caught between two extremes and have difficulty adapting to the system either way. If you are in a safe seat, you know your vote is unlikely to make any difference. That's why party

politicians tend to favor single member systems. A safe seat is a local monopoly for some party, whose candidate does not have to earn an elective proportion of the vote, in competition with candidates of his own party, as well as of other parties.

In a marginal constituency, you may have to vote tactically for the best chance to make your vote count. The information value of the X-vote is too low to register more than a single preference, unlike a ranked choice.

A combination of an elective proportion and a ranked choice (which exists as a voting system called the single transferable vote) therefore increases the effective complexity of a voting system in two ways. The ranked choice of a preference vote reduces all the "noise" from split votes that interferes with and frustrates the popular will. A proportional count prevents votes being wasted in predictable pile-ups that make safe seats.

In short, the voters have the best chance of adapting the political system with transferable voting.

That's why the Establishment least wants that system, to disestablish its opposition to the world's changing needs. Michels called this evident state of affairs "the iron law of oligarchy." But government is supposed to be the cybernetic principle of the rulers responding to the (especially voting) information feedback of the ruled. The least effective government as cybernetic system has minimal feedback methods of voting.

Typically, these are partisan systems that only tell the rulers what they want to know from the ruled, namely that they follow their party lines. Indeed, the voters can do no other, as the likes of party list systems pre-define the terms of the popular vote.

Zipf's law, self-similarity and fractals.

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I read somewhere that at a conference, Stephen Hawking had just quoted off the top of his head an equation about a mile long, when Murray Gell-Mann promptly stood up to point out a missed term. Yet *The Quark And The Jaguar* takes an interest in the simplest of arithmetic laws.

They may apply thru-out the sciences. Zipf's law is one of many "scaling laws" or "power laws" about which "...we see what is going on but do not yet understand it." For example, you can rank 1st, 2nd, 3rd etc the cities of a country by their population size, which turns out to be inversely proportional to that rank.

If the first city has about 10 million people, the second city turns out to have about half that number or around 5 million. The third largest city will have one-third the population of the biggest, or some three and one-third million people. And so on, down to, say, the hundredth city at about 100,000 citizens.

Similar relations hold for ranking countries by their volume of business in exports, or for ranking firms by their volume of business in sales.

Modified versions of the Zipf law may produce a formula that is a better fit of the data, but the point is that there is an underlying regularity. Gell-Mann says this is reminiscent of self-similarity found in nature. Trees from their largest branches to their smallest twigs, or rivers down to their smallest tributaries, have a characteristic shape

at every scale. The same is true to some extent of clouds and mountains and many natural features.

Such features do not have regular dimensions, one, two or three. But they were found to have fractional dimensions. A screwed-up ball of paper is not a proper ball of three dimensions but is more than two dimensions. It may typically measure over 2.7 dimensions. Likewise, the squiggly lines, say, of rivers on maps, have a characteristic fractional dimension of slightly more than one dimension.

Hence, the term "fractals," which relate to "chaos theory." In *Does God Play Dice?* Ian Stewart says: "The same complexity of structure that lets fractals model the irregular geometry of the natural world is what leads to random behaviour in deterministic dynamics."

Knowing the fractals of natural phenomena enables them to be modelled realistically as in computer "landscapes."

You could also simulate a society and an economy, with the help of scaling laws like Zipf law.

Borda method

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The Santa Fe Institute includes political science in its array of systems studies. But it is possible Gell-Mann colleagues haven't heard of Borda Method of counting votes for a single vacancy. This is actually an electoral version of Zipf law.

Voters can order their choice of candidates, 1st, 2nd, 3rd, 4th, etc. These preferences are given due weight in the count, as a measure of their order of importance. If there were five candidates, your first

preference would get five points; your second would get four points, and so on to your last preference getting one point. Laplace gave an involved proof of Borda Method.

In *Elections and Electors*, JFS Ross pointed out that the more candidates standing, the less important the first preference, using Borda method of weighting the count with an arithmetic series. Ross suggested the preferences be weighted by a geometric series. The first preference would count as one vote, the second as half a vote, the third preference as one-quarter of a vote, the fourth as one-eighth of a vote...

A happy medium, between weighting by the arithmetic series and by the geometric series, would be to weight preferences with the harmonic series. Choice 1 counts as one vote; choice 2 counts as $1/2$ a vote; choice 3 counts as $1/3$ of a vote; choice 4 counts as $1/4$ of a vote...

This modified version of Borda Method was once favored by Sir Robin Day. And it is Zipf law for an election, whereby the count is inversely proportional to the vote.

You could imagine Zipf law applied to cities as an "electoral" system of how people vote with their feet. The largest city attracts twice as many as the second largest, three times as many as the third largest, etc. Borda political justice turns out to be a case of art unconsciously imitating nature.

Borda method was designed to overcome an objection to the Second Ballot, which does not weight preferences to account for their order of importance. If three candidates contest one seat and none wins over half the votes, the candidate with least votes has to stand down. A second ballot decides between the two remaining candidates.

Condorcet pointed out that the eliminated candidate (say, a center candidate) might have won more votes from either a right or a left wing candidate than they would have won from each other. (By the way, this isn't necessarily the case. Extremes may have more in common than moderates.)

Borda method, in turn, is open to the objection that the lesser weights given to lesser preferences, count to some extent against a voters first preference. That candidate has a better chance of winning if the voter refrains from adding further choices.

This problem is overcome by the transfer of votes, surplus to a quota or proportion of votes needed to elect the most preferred candidate, according to voters succeeding preferences for candidates, elected in multi-member constituencies.

The size of the most preferred candidates surplus vote determines how much weight to assign to the next preferences of the most popular candidates voters.

Borda method has to assume what value voters assign to their preferences. But with (the so-called Senatorial rules of) transferable voting, this is a real value based on the size of surplus votes, which does not count against more preferred candidates already elected.

Benoit Mandelbrot generalised Zipf law by adding a constant, c , to its inverse proportion. That is, $1/1$, $1/2$, $1/3$,... becomes $1/(1+c)$, $1/(2+c)$, $1/(3+c)$,... Let that constant equal one, and you have the Droop quota, which gives the elective proportion of votes to become a representative in one, two, or three member constituencies etc. The Droop quota is used with transferable voting. Candidates, winning more than their quota, have their surplus votes transferred to their voters next preferences.

Zipf law describes natural structures. Whereas Borda method is a similar structure, consciously imposed by the rules of an electoral system.

"Landslide" majorities.

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Murray Gell-Mann cites the work of Per Bak and associates on how structures arise naturally without imposed constraints.

Cone-like heaps of sand had more grains of sand piled on them. As their steepened slopes became more unstable, a critical value was passed for avalanches, which left the slope back at the critical value. This cycle was called self-organised criticality.

The single transferable vote is analgous to such "self-organised systems." The surplus votes transferred to next preferred candidates are akin to the avalanche, a political "landslide majority," caused by the piling of extra sand on a mound or cone, above the value for a stable heap. This critical value compares to the quota, or proportion of votes needed to elect the most preferred candidate (and in turn the next preferred candidates).

Proportional representation originally came about, in the early nineteenth century, when school children queued behind their favorite class-mates to form a committee. The most popular children had longer queues than they needed, so some supporters slid away to help their next preferred mate get elected. Children queueing behind least popular candidates, deserted them to help their next preferences, still in with a chance of forming a long enough queue. The winning candidates would have queues of the same or

proportionate length, that no other candidate could match. This original inter-active version of the modern single transferable vote form of proportional representation fits the Gell-Mann description of a self-organizing (voting) system.

The actual way that grains of sand tumble together is extremely complicated, just as is the way that thousands of voters preferences combine. But each scenario clearly follows a typical structural development. The contrast is that Per Bak and his colleagues evolved formulas from a phenomenon. Whereas the pioneers of electoral science, from Borda and Condorcet, Andrae and Hare, Clark, Droop and Gregory, onwards evolved a phenomenon from formulas.

The former is natural science, the latter is "moral science" but the two are complementary.

The introduction to *The Quark And The Jaguar* and the last chapter on a sustainable world is an admirable survey that perhaps speaks for many as to the kind of world they would like to work for.

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Paul Erdős: review of Paul Hoffmann, on *The man who loved only numbers*.

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Paul Erdős was the second most prolific mathematician in history, after the Swiss, Leonhard Euler. He is the most prolific collaborator with other mathematicians. Hence, an ordinal number system named after him, which grades how closely any mathematician came to work with him. If you have an "Erdős number one," that means you actually did a mathematical paper with this prodigy. "Erdős number two" means you have done a joint paper with a mathematician who did a paper with Erdős.

I know someone whose bigger brother is an Erdős number two. She wonders if having her homework done for her, by said brother, makes her an Erdős number three!

At our book club, we gave little talks about a book we had read. She enjoyed my talk about the Paul Hoffmann title, some time ago. She said I was right: he did bring his mother along with him.

That much I had faithfully gleaned from Hoffmann. (Unfortunately, I can't remember exactly what I said. The following account differs somewhat.)

Paul Erdős was of Jewish Hungarian extraction. The book says the name Erdős is pronounced "air-dish." My father said the Hungarian pronunciation is actually "err-desh." That is err, as in "to err is human, to forgive is divine," and desh, as in Bangladesh. (Scots would give "err" its traditional and fonetic pronunciation, which does sound like the normal pronouncing of "air," but I mean the more typical pronunciation of "err," as an unstressed vowel sound.)

The physics nobel prize winner, Abdus Salam also was a mathematical prodigy, which was how he came to be discovered in his home country of Bangladesh. He set up a foundation in Italy to help others like himself in under-privileged countries. Evidently, they put much back in their homelands, and do not constitute a "brain drain."

You may think it is good to tell I am not a mathematician, because they do not work on irrational associations. The conclusion is correct but the inference false. Yes, I'm not a mathematician. No, they do. A versifying colleague (half) rhymed Erdős with "Kurdish," as about the only people not to benefit from one of his math papers. Erdős was enthused to submit a paper to a Kurdish journal of mathematics. But he found there wasn't one.

(Not being a mathematician, apologies for not knowing other mathematicians names from Hoffmanns book -- Erdöses own name being all I could master.)

Paul Erdöses parents were both mathematicians. Paul, himself, never married, as title of Hoffmann biography suggests. His genetic heritage went no further. He called children "epsilons," the Greek letter mathematicians use for small quantities. He loved children and was good in their company. Earlier fotos show him beaming in their presence.

Paul never really grew up. He was always a mother's boy. War and conquest deprived him, as it has many, of a father's influence. He was not allowed to tie his shoelaces, till his age was into double figures. His mother was so possessive, she once appeared out of an upstairs window to ask her son, in the street, what was he doing with that girl. She was the girl-friend accompanying Paul's friend.

By all accounts, his mother was likable, as well as dominating. Five years after she died, Paul was gloomily crossing some campus. A colleague asked him what was the matter. He replied: He missed his mother. Reminded this was five years ago, he said, he knew. After her death, he threw himself even deeper into his vocation. More than one photo of him, in later life, show him asleep at formal group takes or just at dinner. Those in mathematical conversation with him would think he hadn't heard. He was like a dolphin that sleeps with one half of his brain, while the other half stays alert. The mathematics went on even while he was dozing.

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Bernard Shaw wisely advised that anyone, who worked more than four hours a day on the most intellectually demanding work, such as research mathematics, was heading for an early grave. A mathematical collaboration with Erdős was a somewhat taxing seventeen-hour day. He would arrive at the door-step. If it was Christmas, he would say something like: Happy Christmas. Let n be the number...

At about four o'clock in the morning, the guest would start rummaging noisily about the kitchen, in his undomesticated way -- he was used to his mother having done everything for him and expected everyone else to. Moreover, this was the hint it was about time his colleague and host got up to do mathematics.

Erdős had no home. He lived from a suit-case, on a perpetual tour to tap other mathematicians brains. "Property is a nuisance" is one of his sayings. He kept himself solvent with earnings from mathematical journals and prizes. He never kept more than he needed to meet colleagues. He was constantly giving money away to the current needy cause, wherever in the world it was.

He might have seemed a sad case, had he not had this professional talent, because no-one might have known the extent of his goodness of character. Perhaps that is the moral of his life. He only needed mathematics but others had a most pressing need of money. He knew this and cared without fuss and without their asking.

One married couple of mathematicians built an extension for him to stay periods. He could be difficult to work with. He could drive the woman, of these hosting partners, to vow she would never work with him again, in her frustration at his bad conversational manners. He would ask her to explain some maths and then interrupt her to try and re-formulate the problem in his own terms, which naturally stopped her in her tracks.

Yet Erdős was an incomparable ambassador of mathematics. He would set people questions with rewards, starting with a five dollar question, grading the prize according to the difficulty of the answer. He could judge ability, so he knew just what level of problem to set. At the top end of ability, he once advised a graduate against a particular thesis. It was too difficult. The young man had cause to be grateful. The problem still wasn't solved by the mathematical world twenty or thirty years later.

Erdős preferred tackling problems that didn't need a lot of specialist knowledge. He best liked solutions "straight from the book" -- Gods manual of creation, as it were -- that carried immediate conviction. In perhaps forty pages or so, two mathematicians, to their intense

pride. had written a proof of a theorem. Erdős happened to notice it on a black-board. Asking the meaning of the notation, from a field of math he didn't know, he wrote straight down, in a couple of lines or so, a new proof -- straight from the book.

He wasn't in the slightest interested in the practical value of his findings. He would be satisfied if no applications were found for another five hundred years. This was not just the doctrine of pure science but the freedom to enjoy mathematics for mathematics sake.

Paul Hoffmann is of interest for also discussing some recent mathematical milestones, such as the proof to Fermat last theorem. The solver happened to know the right branches of study and worked long alone to win the prize on offer. This way is in complete contrast to the co-operative Erdős. Ironically, a hole was found in the closet solvers proof and he was driven to seek help from another mathematician, to plug the leak in his proof.

However, I must admit to finding the cited problems, in pure math, neither practical nor interesting. There was one old brain-teaser I found appealing and remembered for a little talk to a non-mathematical group. A well-known tv hostess with a super IQ caused a storm of controversy with it:

Suppose you are on a quiz show. You may choose to open one of three doors. One has a prize behind it, an other a booby prize. Suppose you choose one door but before you open it, the show hostess, opens another door which reveals no prize. The hostess then allows you to stay with your first choice or to choose, instead, the other unopened door.

The question is: which is the best strategy?

The tv woman with the genius IQ said: change your choice. Letters at a rate of nine to one disagreed with her, including some

academics, on the degenerate influence of tv, saying things like: you really blew it, this time! Their argument was that the move from one door to the other shouldn't make any difference, because there was an equal probability that the prize would be behind either still unopened door.

Of the little group, this reviewer talked to, some guessed right some wrong. None really know. I had thought like the ignorant ninety per cent. The interesting thing is that the most prolific mathematician of the twentieth century couldn't understand, either. Like a green student, he pestered his host and colleague for an explanation.

Erdős was shown a computer simulation of the quiz show given a large number of trials. On average, the probability of winning the prize was one-third, if one stayed at the door of ones first choice. If one changed ones choice, the probability of winning became two-thirds.

Erdős accepted the result but he still wanted a transparent explanation "straight from the book."

A friend and colleague put it this way: You, as the quiz contestant, know you are going to be given the chance of making two choices for the prize.

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Julian Barbour: The End Of Time

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All the world's a kinema.

Suppose the audience of a picture house are immortal souls and that the happenings on screen relate to this world of ours. A holographic movie would be even more like three-dimensional reality. The audience of souls become so absorbed in the goings-on, on screen, that they forget themselves and identify with the actors, some more than others, and perhaps one in particular, who becomes ones (mortal) self. Consciousness has shifted from timelessness to time.

Our holographic lives, in the kinema, are apparently kinematic or moving in time. But God, the great movie maker, knows better. A movie reel is made up of a lot of static images. The projector runs them too fast for us to see the jumps between them, giving an impression of flowing motion. Gods cuttings floor is strewn with rejected images, immensely more than left out by any human director, because the divine director works on a grand scale.

This stupendous totality of imaginary realities, from which a miniscule number are selected to become our conscious reality, is called Platonica by Julian Barbour.

This is after Plato, on an underlying reality of perfect forms, to which our world only approximates. We are likened to cave-dwellers, round a fire, who see only shadows of a real world outside.

Platonica is a timeless jumble of practically infinite possibilities. The images most likely to come together in an appearance of timely motion are the kinematic slides best matched to each other. If you cut a movie reel into its individual slides, you could put them back together in sequence by comparing those which were best

matched to run continuously. In platonism, though, there is an embarrassment of choice from every conceivable possibility of image, though the vast majority are so ill-matched that they are easily dismissed from any probable historical sequence.

The explanatory success of quantum theory has made physicists take seriously the notion that there is a graded potential for all logical possibilities of existence to become reality. Barbour makes the point that these possibilities could include unimaginable heaven, purgatory and hell. (He has a pantheistic belief in platonism, rather than in a personal god.)

Julian Barbour wrote *The End Of Time* (1999) about how such a timeless nature of reality might work. It is physics not the metaphysics of God and immortal souls. Though not Barbour's view, it is perhaps worth mentioning that karma, for example, is a sort of probability theory of reincarnation, whereby the moral conditions of souls best-matches them to a succession of mortal bodies.

Time and motion

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I attempt to explain Barbour to myself, but don't pretend to fully understand his book, and apologise to readers for errors or infelicities. Barbour gives us passengers a privileged tour of the engine room to the ship of physics. This review is meant to be no more than a guide. My guides never managed to do without going back and obtaining the masterpiece in question.

Julian Barbour is a physicist, who forsook main-stream university life, to concentrate on the meaning of time. He decided, as a young man,

that time could be reduced to terms of "movement." This was the motive for, to quote the sub-title of his book: The next revolution in our understanding of the universe.

This is rather as if a clock was considered not as telling "the time" but as its "movement," which is the name for the mechanics of a clock. Mechanical toy trains were described as (running on) "clock-work."

The heavenly bodies regulate living bodies, so that they have their own "biological clocks." Human beings even regulate themselves with an abstract concept of time. Where does this notion come from? And from what does time ultimately derive?

Astronomers used earth rotation for their clock. About the turn of the twentieth century, they found earth rotation rate was not quite regular enough, because of lunar gravitational effects. The earth may be put out of sync by the moon. The sun and its planets, as a whole, make a more regular clock-work, because they are isolated from any such intrusive influences.

This change to a newer heavenly time-piece may be compared to man making a more regular mechanism by designing a longer train of cog-wheels, that slows down the full force of the main-spring to unwind more gradually and uniformly. That way, the clock is less liable to gain too much when fully wound up and to lose too much as it runs down.

So, the solar system was adopted as a more regular natural clock. This is called ephemeris time. Ephemeris tables give the positions of the planets at given times. The most convenient planetary pointer for so telling the time, but not the most accurate, is the moon. Thus, time is a convention that depends on the most regular available time-piece.

Ephemeris time was soon superseded by a convention based on atomic periodicity. (On the very small scale of the atom, gravitational disturbances are negligible.) But it remains a pointer, in the Barbour quest for the true nature of time. The solar system is a little universe in itself. Indeed, by the start of the third millenium, mans technical ability scarcely reaches to its limits.

Barbour suggests that if time is more accurately measured by a graduation from diurnal time to ephemeris time, then the ultimate time-piece is nothing less than the universe itself.

The principle of Ernst Mach is that time only makes sense in terms of motion and motion is relative to the motions of all the masses of the universe, on which time, therefore, ultimately depends.

Universal gravity is its "main-spring" which spins whole galaxies in its train. (The actual train of the stellar clock-work mechanism, or which cogs connect with which, also might be used as a fanciful analogy to Barbour idea of "best matching.")

By definition, the universe is everything that there is. It would be illogical to think of a god, outside it, timing its run, with a stop-watch. But that is essentially what the notion of "absolute time" is, in classical physics. Barbour wishes to promote Ernst Mach principle of a self-referential universe, from which time is a convenient derivation but no more than that. The very convenience of the concept of time may make it a most powerful illusion. But basically time is just an illusion, Barbour thinks. Hence, the title of his book.

The obvious precedent for this way of thinking is how physics overturned the convenient fiction that the sun travels round the earth, rather than vice versa.

The shape space of triangle land.

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Barbour sets out to show how the notion of time may emerge from a universe considered merely as the relations between all its objects. To do this, he imagines a model of the simplest of universes, consisting of three objects. Three objects have a triangular relationship and he calls this universe "triangle land." If these are massive objects, their relations will be governed by the law of gravity.

There is no-one running a stop-watch to gauge the time it takes for the three bodies to change their positions relative to each other. There is no absolute time. Nor is there an "absolute space": these bodies are *not* spatially measured with respect to the sides of a box of co-ordinates, the length, breadth and height of some cube-shaped room.

Barbour triangle land is a universe sufficient to itself. So, it must fashion any co-ordinates, such as it may have, in its own terms. In practise, this means taking the three bodies in one configuration at a time. That is one differently shaped triangle at a time, with the bodies at its three corners. Barbour calls each of these triangles "time-instants." They are like fotografs or snaps of the bodies at one instant of time.

All the possible configurations for three bodies can be represented by all the possible shapes of a triangle. The general geometry of triangles is, in effect, the structure of the space, or the "configuration space," within which these three bodies must move.

For the possible relations between four bodies, the geometry of a tetrahedron land, in six dimensions, would apply, analgously. And so on, for greater numbers of bodies, in hugely multi-dimensional configuration spaces.

Happily, the simple "universe," of positions for three bodies, can be visualised in three dimensions. Their three co-ordinates are AB, BC and CA. These represent the lengths of each side of a given triangle. Each triangle is then pin-pointed accordingly within this box of co-ordinates. One corner of this box is taken as the origin, meaning the point representing a triangle, all three of whose sides are zero. This is the unique point at which all three bodies, configuring a triangle, meet. Barbour suggestively calls this the alpha point.

From that corner, the three room-edges of length, breadth and height extend. A "triangle" pin-pointed exactly on co-ordinate AB, BC or CA is just a greater or shorter line AB, BC or CA, respectively.

The geometric properties of triangles limit the area of the box that may be filled with positions for possible triangle shapes. One triangle side cannot be longer than the sum of the other two. This limitation removes some points in the box as possible positions to represent triangles. The borders of this limit are described by a regular three-cornered pyramid, whose apex is at the origin of the box.

The pyramids three edges, to its base corners, extend at 45 degrees to the three co-ordinates AB, BC, CA. These pyramid-edges represent triangles, two of whose three corners coincide, one of their sides being zero length. This stands for two out of three bodies meeting. They are the next most unique positions to the origin or alpha point. (Diagrams are given in Barbours book!)

It does not matter how far the edges of the pyramid extend or how large is the base triangle of the pyramid. You can cut the pyramid into triangular cross-sections. Each cross-section is, in effect, a more or less broad base to the pyramid. These cross-sections all reveal the same pattern of information about the geometrical nature of the triangles that all the positions on their surfaces represent. These

cross-sections are called "shape space." Independently of scale, shape space contains positions for every possible shape of triangle.

Notice that the geometric meaning, of the pyramids edges, is retained in the cross-sections of shape space, considered as the base corners, that the edges extend-to from the pyramid apex. The base lines of the pyramid, which are also the sides of shape space, are the positions for all triangles, in which the length of one side equals the sum of the other two sides.

Also, the very centre of each cross-section is the one position in shape space marking an equilateral triangle. It is perpendicular to the pyramid apex, where three bodies are zero distance from each other. The apex or alfa point is like an equal-sided triangle, where all three sides are zero length.

A potential energy contour map can be drawn over shape space. Potential energy is inversely proportional to separation, so the potential energy rises like canyon walls over the shape spaces three corners, each representing two of the three masses coinciding. Indeed, the potential energy only depends on the relative configuration of masses. It is independent of a frame-work of absolute space and absolute time, and so is a suitable measure of changes from place to place, in platonia, as mentioned, below.

A fuller analysis of the shape space of triangle land revealed the following. Three lines, that cross at the center to make perpendicular bisections with the three sides of each cross-section, mark the only positions for isosceles triangles (where two of the sides are equal).

It turned-out that right-angled triangles positions were found only on three lines concave to the three sides of shape space. The three "lens" areas, in between, represented positions for triangles with an obtuse angle (greater than 90 degrees). The remaining central area

of shape space designated acute-angled triangles: all their angles less than 90 degrees.

The moral is that even the simplest of platonia or relative configuration spaces, consisting of three bodies possible positions, has a geometric structure. Whereas, absolute space is treated as absolutely uniform. No point in absolute space is regarded as different from any other. It is essentially a transparent abstraction.

Julian Balfour believes that the extremely complex structure of a platonia of the real universe will be shown to guide the apparent "arrow of time," which gives us the impression of being caught on a present flow of time out of the past into the future. The mathematical demonstration of Barbours conjecture is liable to be extremely difficult.

The notes of his book mention collaboration on a dynamic geometry to remove completely the concept of absolute distance. This would be analogous to the way shape space removes over-all scale from triangle land. But, as well as that, the ratios of lengths of sides would no longer be relevant. (Barbour web sites promised news: www.julianbarbour.com or platonia.com).

Shortest paths in triangle land.

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We must remember that triangle land has no outside observer timing a sequence that these triangles might make, as a means to determining the distances between them. The so-called "relative configuration space," that makes up triangle land, consists of nothing more than a jumble of triangles. Barbour names "Platonia" all such

relative configuration spaces for any given number of bodies, up to the totality of the universe itself.

It is still possible to measure a "distance," in platonica, between neighboring triangles, without reference to an outside frame-work.

The distance measure for triangle land, used in The End Of Time, is like Pythagoras theorem in three dimensions, but with the hypotenuse transformed into the platonica "distance" and the three perpendicular sides of a three-dimensional triangle transformed into the distances, AA^* , BB^* , CC^* , between the respective corners of two triangles in triangle land.

If the three bodies, at the corners, have different masses, this may be allowed-for by weighting this calculation.

In other words, if a , b , c , are the masses of three objects, in two different triangular configurations, ABC and $A^*B^*C^*$, then the platonica distance, squared, equals a times (AA^*) squared plus b times (BB^*) squared plus c times (CC^*) squared.

Any two such triangles can be moved relative to each other, so that their distance, represented by neighboring points in platonica, is at a minimum. This minimum distance is termed their "intrinsic difference" and, as such, is said to represent their best-matching position.

(The formula for intrinsic difference is modified by a function of potential energy, actually the square root of minus the potential, according to Barbour. This modification, "the action," does not affect the argument.) It can be found for any two distributions of matter, such as astronomers might observe, at any time, in any arbitrary relation to each other.

These shortest paths, in platonica, are like the geodesics in general relativity. In that theory, light appears to bend or curve under gravitational attraction, because it is actually following a shortest

path, determined by the geometrical curving of space around gravitational masses. Given that platonia can have its own geometrically determined "lines of least resistance" or geodesics, these are the most probable paths for a configuration of masses, plotted in platonia.

(2) geometric dynamics.

Deriving Newton laws from Mach principle.

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Bruno Bertotti and Julian Barbour constructed a theory of geodesics to determine the shortest path between any two fixed points in platonica. They found that the unique history this produced, from an initial point and direction, corresponds to one of many such histories that Newton framed in absolute space and time. This correspondence was to the special case of a Newtonian history, with zero energy and angular momentum, which solves in terms of "a simpler timeless and frameless theory."

Barbour and Bertotti produced the mathematics that put paradigm Newton in the context of the Mach principle.

Assuming the universe is finite, the total energy and angular momentum of its sub-systems add up to zero. But this will not be true of most sub-systems, themselves. So, they will produce the much more common Newtonian solutions for galaxies or solar systems with non-zero energies and angular momentums, as if they were in absolute space and time.

Even to Isaac Newton contemporary, Leibniz, absolute space and time seemed a cumbersome frame of measurement. In determining the evolution of a configuration of, say, three masses, from its initial conditions and direction to a second configuration, fourteen dimensions (allowing fourteen "degrees of freedom") are involved. But only four of them make any difference to the result.

The ten absolute dimensions that make no difference are: three spatial dimensions each for the first and second configurations, from the points of view of their centers of mass; the starting time, another dimension; and the three-dimensional orientation of the first triangle.

The four remaining dimensions that do matter are the orientation of the second triangular configuration and the absolute time elapsing between the two configurations positions, or to put it another way, the angular momentum and the kinetic energy, respectively. The angular momentum of the three-mass configuration is like a spinning top with an imaginary pivot, thru its center of mass, pointing skywards over two dimensions, with a third dimension from the axial rotation of the triangle perpendicular to the pivot.

Spiral galaxies and the rings of Saturn are spectacular astronomical examples of angular momentum.

In relative configuration space or platonica, the process of best matching, from one configuration to another, creates a determinate relation, of all the configurations to the first chosen configuration, which gives an appearance of a rigid frame-work, like absolute space and time.

Barbour completes a derivation of Newton, from Mach, world view, with respect to the "spacings in time":

In the equations that describe how the objects move in the framework built up by best matching, it is very convenient to measure how far each body moves by making a comparison with a certain average of all the bodies in the universe. The choice of the average is obvious, and simplifies the equations dramatically...It is directly related to the quantities used to determine the geodesic paths in Platonica. To find how much it changes as the universe passes from one configuration to another slightly different one, it is necessary only to divide their

intrinsic difference by the square root of minus the potential. (The action, by contrast, is found by multiplying it by the same quantity.) When this distinguished simplifier is used as "time," it turns out that each object in the universe moves in the Mach framework described above exactly as Newton laws prescribe.

Prominent role of time in Relativity.

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Having derived a simulacrum of time from a dynamic geometry of gravitational masses, in Newtons system, the next step was to do likewise for the theory that superseded it, Einstein general theory of relativity. This was a daunting task, since time plays such a prominent role in both special and general relativity.

A first set-back is that Barbour platonia is a collection of time-instants or Nows. But special relativity seems to do away with the concept of (what time is) Now, or Simultaneity, as what we are agreed is the same time for all of us. Simultaneity turned out not to be a universal time but locally measured times, that differed as to what time is now, from their different frames of reference, in uniform relative motion to each other. Only observers at rest in relation to each other would agree when something happened, in high velocity or high energy physics.

Galileo relativity principle observed that the laws of motion hold within the cabin of a galley, whether it is moving or at rest. You couldn't tell, say, from two people playing ping-pong on the captains table, whether the ship was cruising or at anchor. Therefore, we cannot say whether the galley is at rest or moving relative to some supposed "absolute space."

As a so-called "inertial frame of reference," the galley merely maintains the inertia of staying where it is or continuing to move steadily in a straight line, unless acted upon by outside forces. Galileo relativity principle makes redundant so much of the aforementioned absolute space and time frame-work for measuring the lawful motion of bodies from known initial conditions.

In Einstein special relativity, Galileo relativity is combined, instead, with a new absolute, in the limiting speed of light. When the motions of bodies, being considered, are very slow compared with light, as they usually are on earth, light speed is effectively a stand-in for absolute space and time. And different observers can match each others frame of measurement, in a common-sense manner, called the Galilean transformations (of their respective co-ordinates, to agree with each other, as to what they've both seen).

But heavenly bodies, receding at astronomical speeds, or the basic constituents of matter, in particle accelerators, approach to a significant fraction of the speed of light. Observers in uniform relative motion need more general formulas to make their space and time measurements correspond to a given event. These are called the Lorentz transformations, which reduce to the Galilean transformations for motions not significant compared to light speed.

The Lorentz transformations adjust observers space and time measures, or rods and clocks, so that neither observer can send a light signal, in relative motion away from the other, that would move faster than the limiting speed of light. There follow apparent paradoxes of time and space. This includes an inability to agree on the Now that something happened: simultaneity is lost.

However, Hermann Minkowski came up with a quantity called "The Interval," by which all observers, in uniform relative motion, agreed what they had measured, in terms of the same "space-time" event.

All the observers noted their respective distances and times, from an event. But when you treated time as akin to a fourth dimension of space, the totality of each observers space and time readings always added up to the same amount, considered as a geometrically integrated space-time quantity.

Most physicists prize this formalism for its unexpected unification of two of classical physics basic concepts. But it seems at cross-purposes to the Barbour program, as he seeks to de-mystify time, rendered in terms purely of changing spatial relationships or a dynamic geometry.

Barbour goes back to Henri Poincaré, in an 1898 paper that posed two problems in the definition of time. One was simultaneity, which Einstein solved in 1905. The other was duration: how do we know a second today is the same as a second tomorrow? How do we know that the hands or pointers of different clocks will allow us literally to keep *appointments*?

An inertial clock of only three identified particles moving inertially could have four snapshots taken to show the distances between them. Peter Tait showed how this information of triangular positions provided enough known quantities, obeying the inertial law, to derive the unknown quantities of the times the snapshots were taken and their positions in an absolute space.

Using one of the particles as a reference point or origin, it turns out that space can be found in which the triangle corners move on mutually uniform straight lines. In other words, either of the other particles can serve as a clock "hand" for the motion of the other two particles, considered as the "movement" or mechanism of the inertial clock.

Duration is reduced to distance. If today or tomorrow any one of the "hands" of the inertial clock moves through the same distance, then we can say that the "same amount of time" has passed. The extra time dimension is redundant: everything we need to know about time can be read off from the distances.

The same applies for mechanisms of much larger numbers of bodies. The astronomers ephemeris time, using the fairly isolated solar system is an inertial clock. The universe is the ultimate inertial clock, because, by definition, there are no outside forces acting on the universe.

For more than five particles, three snapshots are enough to solve Tait problem but two are never enough to tell about relative orientations and separation in time. These variables require the four out of fourteen dimensions not redundant in Newton absolute space and time frame-work, that were mentioned above.

Angular momentum accounts for three of those four dimensions. Even if the rotation of a mass is uniform, the velocity of that rotation involves a (centripetal or normal) component of acceleration, due to the change in direction of the velocity. And Newton justified his absolute frame-work with regard to acceleration, not velocity.

A timeless geometric dynamics within general relativity.

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General relativity is usually considered in terms of Minkowski four-dimensional space-time generalised from Euclid flat surfaces to Riemann geometry of curved space. The special theory made use of

Galileo relativity principle for the freedom it conferred to observers irrespective of (uniform) relative velocity between their co-ordinate systems. Einstein general theory extended this relative freedom of observation with co-ordinate systems (of geometric curvature), irrespective of (uniform) relative acceleration between observers.

Albert Einstein equivalence principle was akin to Galileo relativity principle in that it imagined observing law-like physical effects, which were reproduced in either of two apparently different conditions. For instance, the apparent bending or curving of light, passing thru space-ship portals, would not tell the crew whether they were in tow under uniform acceleration in empty space or whether they were in a gravitational field.

This reviewer is no physics expert and Barbour account of relativity is mainly concerned to relate relativity to his own program that time does not exist. Suffice it to say that Barbour and Bertotti were told by Karel Kuchar that the math of their ideas of best matching and duration was implicit in a less well known dynamic treatment of general relativity.

Originally, Barbour and Bertotti didn't know that a dynamic geometry (or geometro-dynamics) of curved three-dimensional spaces, based on Mach principle, is implicit in general relativity. (Einstein never knew it.) So, they set about creating one. One incentive was the work of Dirac and others:

They found that if general relativity is to be cast in dynamic form, then the "thing that changes" is not... the four-dimensional distances within space-time, but the distances within three-dimensional spaces nested in space-time. The dynamics of general relativity is about three-dimensional things: Riemannian spaces.

A platonia is defined as "any class of objects that differ intrinsically but are all constructed according to the same rule." We saw this of sets of three particles according to the geometric rules of triangles. Likewise, Riemann spaces can be treated as time-instants, registering as points in a platonia, if one of infinitely many dimensions.

As mentioned (above, at end of section, the shape space of triangle land) the problem of infinite spaces might be removed. At any rate, it is convenient to consider finite Riemann spaces. How a three-dimensional space folds up on itself is hard to imagine. But a finite two-dimensional space is like the surface of the earth or an egg.

All the shapes, that cannot be transformed into each other, without stretching, count as a separate point in platonia, as is any number of superficial variations on these shapes. This platonia of possible empty spaces is itself vastly increased by "painted patterns" on the surfaces, to represent matter, electro-magnetic and other fields in the universe. Indeed, general relativity related gravitational mass to spatial curvature. And the platonia of three-dimensional Riemann spaces is known as "superspace" in the formalism, given to general relativity, by John Wheeler and colleagues.

Best matching in this Riemannian platonia is much more complicated than for triangle land. Barbour illustrated this at lectures, using two convoluted fungi, of rather different size and markings, which he labelled Tristan and Isolde. A first guess, at their corresponding positions, is marked by pins, with matching numbers 1, 2, 3, etc. This "trial pairing" serves as a basis to establish a "provisional difference," an average of all the differences of curvature at each pair of points.

Keeping the pins fixed on Tristan, the pins are re-arranged on Isolde, as many ways as possible, in a continuous fashion. The best matching pairing and corresponding intrinsic difference is the

transition, between any ever so slightly differing pairings, on this continuum, where the provisional difference remains unchanged. (That is the "stationary point.")

"Now" appears even more arbitrary in general relativity space-time than Minkowski space-time. But general relativity exactly positions two three-spaces in four-dimensional space-time, whose geodesics are followed as the world-lines of bodies. Indeed, clocks, traveling the lines, measure the proper times. The world lines, like a series of "struts" compare to the "pin"-matching of pairs of three-spaces.

The Einstein equation states a best-matching condition between two three-spaces, which also feature as time-instants in platonica. As just these two "nows" are needed, general relativity turns out to justify Mach belief in the redundancy of a third "now," thought necessary for measurement in the context of Newton absolute frame-work of space and time.

At the end of the above section, deriving Newton laws from Mach principle, Barbour was quoted on the distinguished simplifier, as creating the same "time separation" across all space. But, to quote him again:

In Einstein's geometrodynamics, the separation between the 3-spaces varies from point to point, but the principle that determines it is a generalization, now applied locally, of the principle that works in the Newtonian case and explains how people can keep appointments...

Since the equivalence principle is essentially the condition that the law of inertia holds in small regions of space-time, and all clocks rely in one way or another on inertia, this is the ultimate explanation of why it is relatively easy (nowadays at least) to build clocks that all march in step. They all tick to the ephemeris

time created by the universe through the best matching that fits it together.

Quantum gravitys conflict over time.

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Trying to give a description of general relativity in terms of quantum theory exposed their conflicting concepts of time. The theoretical likenesses between Maxwell on electro-magnetism and Einstein on space-time (especially when almost flat like Minkowski space-time) led physicists to believe that just as the photon is the quantum concept associated with the electro-magnetic wave field, an analogous massless particle, the graviton, could be conjectured for the field of gravitational waves, too weak to be detected by contemporary devices.

A relativistic effect of the masslessness of the photon nullifies (longitudinal) waves that would move along its direction. At right angles to the direction, two perpendicular (transverse) waves, giving two *true degrees of freedom*, constitute two independent polarisations of light. These are what bees can see to orient themselves.

Paul Dirac and the ADM team (Arnowitt, Deser and Misner) wanted a general quantum gravity, including for curved space. But the graviton and gravitational fields implied two true degrees of freedom did not match general relativitys three degrees of freedom of the three-spaces, whose "geometry - the way in which they are curved - is described by three numbers at each point of space."

Physicists attempted to match the two theories differing degrees of freedom. Since time was thought to be needed for the quantum description of gravity, it was believed time might be identified with one of the three-spaces. But this would go against the equivalence of all co-ordinates in relativity theory, denying a definite time.

To apply the (Schrödinger) equation of quantum mechanics to geometric dynamics, the Wheeler-DeWitt equation fell back on Dirac method of deferring a choice of time dimension from three spatial dimensions. Barbour advocates a "naive" interpretation, of this version, as the stationary state Schrödinger equation for a zero sum energy of the universe.

The text-book ball-and-strut models of molecules are only the most probable configurations of the structure of micro-scopic matter, this equation normally describes. The Wheeler-DeWitt equation is a telescopic version, with the universe as one "monster molecule" which also has its huge number of other possible configurations. These are the collections of "time-instants" or nows, that make up the points of a timeless landscape, that is Barbours platonica, at the other extreme of complexity to triangle land.

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Julian Barbour: The End Of Time

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Quantum energy waves of particles.

Relativity is based on the limiting maximum velocity of the speed of light, c for celerity or constant. Quantum theory is based on a limiting minimum of energy transfer in "lumps" or "quanta" (or quanta, as I would say). Max Planck invoked this near infinitesimal quantity, h , the "quantum" in relation to a problem with infinitely continuous waves of radiation, thrown up by the theory of ovens or black boxes.

Light had been shown to have wave-like effects of interference patterns, such as are seen in water waves. Introducing "light quanta" suggested light waves are fundamentally made up of particles. It is as if one were to change one's belief, that water waves form a continuous flow, to considering them as really more like dunes or waves of sand, that on very close inspection are made up of tiny grains.

However, this simple analogy glosses over the deep puzzles encountered on an altogether smaller scale of physical phenomena.

Einstein took up Max Planck's idea of the quantum, in the form of light quanta or photons, to explain the "photo-electric effect." It was found that bombarding the surface of metal, with certain beams of light, dislodged electrons from its surface. The effect didn't depend on the intensity or brightness of the light used. If the light was ultra-violet, no matter how dim the beam, it still succeeded in knocking off electrons.

Einstein explained that higher frequencies of light, or more generally electro-magnetic radiation, such as violet or ultra-violet light were, in effect, faster "bullets" or quanta (quanta) of light energy. Dimming this more energetic light only meant that fewer bullets were being fired. But when they hit an electron, bound to a metal atom on the surface of a metal plate, they would still dislodge it.

In contrast, it didn't matter how bright you made longer wave, red or infra-red light; in other words, it didn't matter how many red bullets were fired, they were all too low energy to ionise the metal surface.

An analogy to the photo-electric effect might be two walkers, walking into someone. They are both going at the same speed. One walker is taking long slow strides and so not using much energy. He hardly disturbs you, passing by. The other walker is taking short fast steps, and knocks you out of the way, bustling by.

These two walkers going the same speed compare to light speed as being constant. The velocity of light equals its wavelength times its frequency. (Or, $v = \lambda \times f$. Texts normally use Greek small letters *lambda* for wave-length and *nu* for frequency.) Red light is just as fast as violet but the former makes up for its lower frequency with longer wavelength. Red light's longer wave-length is like the longer strides of the walker making up for a lower frequency of steps.

Einstein 1905 paper on the photo-electric effect is summed up in the formula, $E = hf$. Energy, E , equals Planck constant, h , times the radiation frequency, f (usually denoted by the Greek small letter *nu*). The formula, $E = hf$, suggests a compromise between the wave and particle theories, of matter in sub-atomic physics, measured as continuous and discrete quantities. The quantum, h , is a minimum discrete energy quantity, of which, wave-length quantities must always be an exact multiple. The frequency, f , is known in the classical physics of continuous circular motion as the time rate of change of an angle -- call it angle Q . (Again I've passed-by the typical Greek letter, in this case, theta used for an angle.)

The double slit experiment.

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Julian Barbour uses the standard introduction, to the many mysteries of wave mechanics or quantum mechanics, with the double slit experiment.

Shine a beam of light thru a single slit onto a wall. Most of the light will go straight thru the slit and form the densest target area on the wall. The rest of the light will get more or less deflected from the edges of the slit and scatter about the densest area.

Replacing one slit with two slits, close together, produces a surprisingly different picture. On the wall, a series of bars form, the middle bars being most densely lit. There is an absence of light strikes between the bars.

The single slit experiment could have been explained as either a particle or wave activity of light. But the double slit experiment has to be explained in terms of light being in the form of both particles and waves.

The bars of light are characteristic of interference patterns found in water waves. When two radiating circles of waves, such as from two stones dropped in a pond, collide, the crests of the two rings may reinforce each other creating higher crests. The troughs may reinforce each others depth. When one ring crest coincides with the other ring trough they neutralise each other to surface level.

The snag is that even when one photon at a time is sent at the double slit, the photon hits on the wall build up the same pattern, as if they were sent in a steady stream that waved into each other. The basic paradox of quantum theory wave-particle duality of light (and electrons etc) is that a single particle can interfere with itself like a wave.

The double slit experiment pattern of photon hits is given a probabilistic prediction by Schrödinger equation of the wave function (denoted by Greek letter ψ). The wave function that gives the best interference effects, in the experiment are so-called momentum "eigenstates" (German for "proper" or "characteristic" states). Eigenstates of position or momentum are the only ones that can be measured with complete or unit probability of matching prediction.

It turns out that the wave function of a particle with a definite momentum (the momentum eigenstate) is two super-posed plane waves out of phase by a quarter of a wave-length. By definition, sine and cosine waves are out of phase by 90 degrees or a quarter of a wave-length.

The quantum mechanical wave function is a complex function. Roger Penrose, in *The Emperor's New Mind*, explains how complex numbers are used in this function.

Suffice it to say, a horizontal x-axis could represent the direction of the two waves. Backward or forward direction is related to which of the two waves comes first. A y-axis could give a back-ground dimension to the sine and cosine waves, turning them from just undulating lines into planar waves. A z-axis could measure the height or amplitude of these waves. But the y and z axes are treated as composite or complex numbers, which are ordered pairs of numbers. These represent two intensities. The sum of their squares is the "probability density" of the (complex) wave function, ψ , of the x-variable. Notably, this gives the probability that a trial measurement will find a particle at x.

A particle has a definite momentum because its wave function has a regular and definite wave-length. At the same time, the particles position is completely indefinite. Its probability density is uniform thru-out space, because the sum of the squares of two sinusoidal

waves, one-quarter wave-length out of phase, is always one, given that they have unit amplitude.

This comes from Pythagoras theorem in trigonometric form: $\sin^2 Q + \cos^2 Q = 1$.

Fourier showed that adding or super-posing harmonic waves of different wave-lengths can produce any curve, even down to a spike, that characterises the position eigenstate. (Mathematics imitates nature's wave-particle duality. The same wave pattern can be regarded as super-posed waves of different wave-lengths or super-posed spikes, with different coefficients.)

These are the extremes between complete and null information we can have between complementary pairs of quantities, such as momentum and position, or energy and time. Heisenberg uncertainty relation measures the extent, that more accurately measuring one of these pairs of quantities, is always at the expense of precisely measuring the other.

The experimenter can measure one or other of the complementary pairs, all implicit in the wave function. So a lack of complete knowledge is offset by a range of choice as to what can be known.

The double slit experiment can be considered in terms of two similar plane light waves super-posed or merged at a slight angle (of five degrees) to each other. At right angles to the mid-line of the five-degree angle, Barbour shows, as a computer-generated probability density, the result, in a concertina-like series of light ridges, corresponding to the light "fringes" that show the interference effect on the wall.

This result relates to William Hamilton on optics. His wave theory showed that regular wave patterns reproduce light rays, without

particles, yet corresponding to the older particle theory of light, and explaining more than it could.

Hamilton found an analogy to this in Newtonian dynamics, for only one value of energy allowed. Depending on an equation, his "principal function" has a varying intensity, like the "mist," at each point of configuration space. This equation is like that for his wave optics, but in multi-dimensional configuration space, instead of the ordinary three dimensions. When the intensity forms regular wave patterns, their respective families of paths, at right angles to their crests, are Newtonian dynamics histories, having the same energy.

This path-making property of regular wave patterns has given them the name "semi-classical," which is also the name of a physicists program, to show how apparent paths in time may "funnel" out of a timeless geometric structure underlying the universe.

Quantum entanglement of a two-particle system.

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The Einstein, Podolsky, Rosen paradox was a thought-experiment designed to reveal that quantum mechanics, compared to classical mechanics, was incomplete in the scope of its explanations. Two particles, such as photons sharing polarisation, or electrons whose total spin was conserved, would be correlated. Changing the state of one would have a correlative effect on the other.

For example, a system of two electrons, with a total of zero angular momentum, implies that if one electron has spin up, the other must have an equal and opposite spin down.

The EPR paradox was that quantum mechanics predicted that if you moved these correlated particles far apart, then changed the state of one, there would be an instant conservative response from the separated particle. But Einstein special relativity forbids any signal passing, at more than light speed, from one particle to influence the lawful adjustment of the other particle.

John Bell theorem showed how quantum correlations must surpass any relations attributable to classical causes. Roger Penrose has further refined these distinctions, especially in his second popular book, *Shadows Of The Mind*, on the "magic dodecahedra" (Penrose dodecahedrons).

The EPR team believed the law of local causes would be upheld against quantum correlation. But by the 1980s, the Alain Aspect experiment team were proving a super-luminal connection between correlated particles. This did not mean signals could be sent faster than light; it did not violate the foundations of special relativity. But it did mean the experimenter could bring about a known, faster-than-light change on a distant particle, by a certain change on its correlated particle.

With the help of half a dozen diagrams, Julian Barbour gives readers a feel for quantum correlations and "entanglement" in the simplest possible two-particle system. Two particles, moving on a line, combine their one-dimensional configuration spaces to make a two-dimensional "Q" space.

The wave function value, for a single particle or a duet, as here, varies with time at each point in Q, which carries information about both particles, as to their positions or other quantities. These predictions are comprehensive, if often mutually exclusive, and refer to the system rather than its parts.

To find the relative probability of configurations of the two-particle system at some point, representative averages are found from the mid-points of a grid on Q . The probability density gives the relative numbers of these representative configurations likely to be found by repeated trial measurements.

Barbour likened this process of prediction and measurement, to giving the predicted numbers of configurations a proportionate number of tags in a bag and then drawing them out at random, as a trial confirmation of the predicted proportions.

These configurations are, in effect, ranked by their greater or lesser probabilities, which is how the Schrödinger equation configures atomic and molecular structure from the configuration space of all possibilities.

(In the simplest "platonian" or relative configuration space of Triangle land -- discussed on the former chapter of this review -- a probability ranking may be established thru best matching all possible triangles, each represented by a point in their platonian.)

Measuring the two-particle quantum system for, say, the position of one of the particles reduces the two-dimensional grid on Q to one dimension. This so-called "collapse of the wave function" yields the only possible positions of the unmeasured particle, as relative probabilities of being somewhere on the remaining grid line.

Hugh Everett assumed that the wave function is "the basic physical entity." Its unimaginably huge numbers of possibilities are taken to constitute "many worlds." Tho we are only conscious of one world being realised, this does not necessarily mean that is all there is. Everett defended this possibility by the linearity or super-position principle of wave mechanics. Waves can split and combine, to create interference effects, but they remain themselves, essentially unaffected by it.

According to Barbour, "To save the appearances, we do not have to create a unique history: we need only explain why there seems to be a unique history. That was Everett's insight."

Barbour sees the essence of things in platonica, the relative configuration space, or a completely relativised version of Schrödinger Q space. This geometric landscape, of all possible configurations of reality, gathers, like a more or less dense mist, the wave function probability density. Following Boltzmann, Barbour assumes: *only the probable is experienced*.

(2) quantum cosmology.

Schrödinger stationary wave equation.

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Julian Barbour thought a timeless universe has to do with turning Schrödinger quantum mechanics into a quantum cosmology. To do that, he first has to relativise the remaining classical absolute time and space frame-work, within which the Schrödinger equation is expressed. Barbour tries to give non-physicists a new insight into these mysteries.

Barbour makes the point, that only the quantum mechanics of a single particle takes place in the ordinary three dimensions. Quantum phenomena create new puzzles in certain two-particle states, or more. These multi-particle effects take place in a configuration space, which Schrodinger called "Q."

In Platonia or relative configuration space (described in the previous review chapter on classical physics) the simplest Platonia called Triangle Land consisted of each possible arrangement of three particles. This requires three dimensions for the lengths of the three sides of each triangular configuration, which has its own point in a "configuration space."

But Schrödinger Q, for triangle land, would not merely rely on the relative positions between the three particles. Q also depends on an external or absolute frame-work. This locates the centre of mass of each triangle in absolute space, requiring three more numbers. Each

triangle orientation in absolute space also requires three more numbers.

The Q , of triangle land is a nine-dimensional configuration space. In fact, for any number of particles, Q always has six more dimensions than Platonica.

The Schrödinger equation comes in a time-dependent and a time-independent form. Barbour suggests, contrary to conventional wisdom, that the latter is the more fundamental. The wave equation, that finds all the possible stationary states of a system, hints at a universal state of affairs in which super-positions of stationary waves create a variation in time of the probability density.

The stationary states, such as in Neils Bohr model of the atom, correspond to a fixed energy level, between quantum "jumps" with the emission or absorption of a photon. The probability density of finding the atom in these states is constant, while the complex or composite values of the wave function oscillate with a fixed frequency. But adding two such solutions, with their respective frequencies, makes them interfere. The oscillations cease to be regular. Adding these timeless solutions yet makes the probability density vary with time.

Barbour gives a pictorial description of the Schrödinger wave function in a steady state.

At each point of the configuration space Q , imagine a child swinging a ball in a vertical circle, on a string of constant length, the "amplitude," denoted by Greek small letter ϕ . Its squared value stands for the constant probability density.

The swinging ball, continuously changing height, above or below the center, stands for one of the two ordered pairs of numbers, that make a complex variable. Its other component is the distance to the right (positive) and to the left (negative).

The stationary state is like swinging such balls at the same rate, every-where in Q, and all perfectly in phase or reaching the top of the circle together. In the momentum eigenstate, ϕ is the same every-where. But generally it varies according to a condition, imposed at each point of Q, by the equation of the stationary state. Barbour describes this condition as: Curvature number plus Potential number equals Energy number.

The curvature number is complicated. For a quantum system of three bodies, each point in Q corresponds to a configuration of the three bodies in absolute space. Holding two of the bodies fixed and moving the third, along a line in absolute space, moves on a line in Q.

ϕ , the string length can be plotted as a curve more or less above the line.

A three-particle Q has three times three dimensions of movement. So there are nine such curvatures at each point of Q. The "curvature number" is "the sum of these nine curvatures after each has been multiplied by the mass of the particle for which it has been calculated."

The second number, the Potential is derived by multiplying ϕ by the potential. The potential energy depends on a given configuration of bodies and their nature, such as their masses.

The third number, the Energy is found by multiplying ϕ by the previously mentioned quantum energy relation, $E = hf$. The frequency, f , is the number of rotations of the "balls" in a second.

Schrödinger compared the stationary state of the hydrogen atom to a vibrating string, which is fixed at either end and must always have a whole number of waves (counted in half-wave-lengths) like the harmonics of a musical instrument. The higher harmonics compare to an atoms higher energy levels. The fundamental note, when the

string is just one over-arching and under-arching vibration (that is, one half wave-length) compares to the lowest energy level of the atom, its "ground state."

This analogy supplies a boundary condition for the solution of Schrödinger stationary state equation, as an explanation of the discrete energy levels, posited in Bohr quantum model of the atom. This condition is that the ends of the vibrating string are fixed, therefore the amplitude of ψ must tend to zero at large distances.

Where the energy, E , minus the potential, V , is more than zero, ψ oscillates. Where $E - V$ is less than zero, ψ tends to zero, only in certain well-behaved solutions (the eigenfunctions) for special values of E (the energy eigenvalues). The eigenfunction of the system, with the lowest energy value, is the ground state. Higher energy states are called excited states.

Finally, if E is large enough for $E - V$ to be positive everywhere, the eigenfunctions oscillate everywhere, though more rapidly where the potential is lowest. The negative eigenvalues E form the *discrete spectrum*, and the corresponding states are called *bound states* because for them ψ has an appreciable value only over a finite region. The remaining states, with E greater than zero, are called *unbound states*, and their energy eigenvalues form the *continuum spectrum*.

Relativised Schrödinger equation of the cosmos.

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Barbour follows much the same plan, to dispense with the remaining Newtonian frame-work in quantum mechanics, as he did with

classical physics. (See previous chapter.) The Schrödinger wave function, of a given system of particles, changes with their relative configuration, centre of mass, orientation and time.

Barbour dispenses with the latter three, as he did for classical dynamics, since the relative configuration of the whole universe is its own absolute space and time, deriving them independently of an external frame-work. This applies Mach principle to Schrödinger equation for a quantum cosmology.

In applying quantum rules to a classical theory of cosmology, Barbour says:

The central insight is this. A classical theory that treats time in a Machian manner can allow the universe only one value of its energy. But then its quantum theory is singular -- it can only have one energy eigenvalue. Since quantum dynamics of necessity has more than one energy eigenvalue, quantum dynamics of the universe is impossible. There can only be quantum statics. It's as simple as that!

In a timeless system, the over-all energy is zero. So, in the stationary Schrödinger equation, at every point of Q , the sum of the curvature number and the potential number is zero. As in classical physics, the potential already is derived from relative configurations of the bodies that make up a (Machian) system, independently of absolute space and time.

As for curvature, that is the rate at which a curve slope changes, with respect to a distance in absolute space, in ordinary quantum mechanics. Barbour suggests replacing these distances with the Machian best matching distances in relative configuration space, as he did to eliminate absolute space from classical physics.

We then add curvatures measured in as many mutually perpendicular directions as there are dimensions in that timeless arena, and set the sum equal to minus the potential number.

The "Machian" wave functions are the Schrödinger eigenfunctions, whose eigenvalues have zero angular momentum, which was the case for the Machian treatment of classical dynamics.

On platonia or relative configuration space, only the potential and best matching distance govern the static wave function variation from point to point. This timeless "topography" determines where the "mist" of the probability density gathers.

This predicts how probable all the inconceivably many permutations of atomic and molecular structures, and ultimately, Barbour seems to argue, how the most probable configurations of the universe best "resonate" each other, in a sort of competition for the appearance of historical reality.

Quantum theory of records.

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Barbour imagines how history emerges from what he sees as the essentially timeless arena of quantum mechanics. He relies on John Bell for analysis of how records are made, in the context of radioactive decay in a cloud chamber, where an alfa particle leaves a track of ionised atoms.

Bell gives two interpretations of this phenomenon depending on when it is assumed a measurement is taken, that supposedly "collapses the wave function" of possible places the particle will be

found. The simpler interpretation assumes that atom ionisation is the "classical external measuring instrument" for revealing the alfa particle, and successively collapsing the wave function, with gradual loss of particle energy and increasing deflection, that can be statistically predicted.

Bell, on second thoughts, treats not only the alfa particle but the whole system in quantum mechanical terms, that is to say billions of potentially detachable electrons, from their hydrogen atoms, all given three dimensions each (together with the alfa particle in three dimensions).

Given time for the ionization of, say, a thousand atoms, a foto takes a measure of the complete system, collapsing the wave function onto a complete track, not onto one position of one particle.

In the second scenario, the wave function has a vastly increased configuration space to search-out. But this land-scape is also vastly more structured and the wave function, like a mist settles more densely, accordingly, determining the points most probably measured. Each point, in this bigger platonia path, "looks like a history of the three dimensional track up to some point along it."

Despite the different view of when the wave function collapses, the results are much the same, because the experiment is a highly organised situation, whereby a highly regular Hamiltonian wave function produces a semi-classical solution that gives the appearance of a path taken in time or a history.

But, in quantum mechanical terms, it is the wave functions probabilistic search thru a timeless topography of all possible histories, that measurement, "collapsing the wave function," realises as one history.

Time dependence on configurations.

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Barbour believes consistency demands that a consciousness of motion must be in one configuration. He guesses that the brain can take in several "snap-shots" at once and "play the movie."

He follows Bell, that "the past" is inaccessible and therefore irrelevant. We have only records of an illusory history. Bell, however, didn't deny the reality of time, whatever his beliefs about it.

This reviewer can't help but think that records are of something. So, to deny that something is a contradiction. Suppose time has a comparable reality to that of space. It can be thought of in the same way. For instance, special relativity treats time, as well as space, as having speed.

Maps are a record of a topography, to a greater or lesser scale. As Charles Dodgson pointed out, the map can be increased to full scale, till the land-scape is a map of itself. Geological strata containing fossils might be considered naturally scaled-down time-maps of evolution. The strata are a spatial map of the ages. One could say they had lost most of their temporal dimension, rather like the Minkowski Interval makes for an inter-change of temporal with spatial dimensions, in space-time.

In denying the reality of time, Barbour finds himself at odds with other physicists wishing to develop the space-time frame-work of relativity theory.

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Brian Greene: The Elegant Universe.

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Finite strings remove infinities.

This Brian Greene science book (published in 1999) is award-winning. He imagines familiar comparisons with the basic ideas of

relativity and quantum mechanics. String theory makes general relativity and quantum theory compatible, if it is correct. We don't know this yet because the supposed strings, that replace point elementary particles, are on far too small a scale (the Planck scale) to be reached by experiment, requiring the kind of energies to be found soon after the emergence of the universe in the big bang.

As Greene puts it, physicists will have to make the big bang itself do, as a cosmic accelerator experiment, and measure its results, in the laboratory of the universe.

In such extreme scenarios, as the big bang, or black holes, the conditions for the large scale physics of general relativity and small scales of quantum mechanics come together. General relativity predicted a singularity or infinitely dense point and infinite curvature at the origin of the universe, or within a black hole. This breaks down the law of space-time being geometrically curved with gravitational mass.

Quantum theory appeared to offer a way out of this impasse with Heisenberg uncertainty principle. A photon that throws light on an electron needs a short wave-length to determine its position accurately. But shorter wave-lengths have higher energy and give the electron a kick that creates an uncertainty in its momentum. A longer wave-length disturbs less its momentum but is a less precise observation of position. It's not just a question of disturbing the momentum of a particle the more accurately it is measured for position, and vice versa.

Empty space is really a seething mass of energy eruptions, viewed on a sufficiently small scale. Tho, over-all, a vacuum has zero energy. The uncertainty relation allows energy to be borrowed in inverse proportion to the time taken. The more energetic a particle and anti-particle creation, the quicker they must annihilate each

other, thus preserving the spirit of the conservation law of mass-energy, within Heisenberg terms.

At the incredibly small Planck length, to confine a particle, in so narrow a region, is to create (literally) massive uncertainty. Consequently, the curvature of the space and time dimensions will lose their continuity and become too grotesquely distorted to be meaningful as left or right etc. General relativity is inapplicable to the so-called "quantum foam." A combined theory of quantum gravity is thus frustrated.

According to the string theorists, the cause of this difficulty is the treatment of elementary particles as infinitely small points of no dimension. Such points would be small enough to probe the quantum foam, below the Planck length. Suppose that elementary particles are one dimensional "strings," so to speak, of about Planck length. Then they will be too "big" to probe the quantum foam, just as one's finger is too insensitive to feel the irregularities of a granite surface.

More exactly, a Feynman diagram, of particle interactions, has a new interpretation, owing to special relativity, if re-drawn in terms of looped strings, rather than point particles. Whoever observed the infinitesimal point particles would agree on their positions at a point of interaction. But for the finite-sized loops, coming together to form a different loop and therefore a different particle, described by a different vibration pattern, different observers would disagree when and where the interaction took place. For, in special relativity, observers in relative motion use space and time co-ordinate systems that disagree when "now" is.

The interaction location is smeared out along the observational indefiniteness, so the force of the particle need no longer be treated as of infinite strength at an infinitesimal point. Finite strings produce

well-behaved finite answers due to the blurring over of the sub-Planck scale with its quantum foam.

Nor would it avail one to pump more energy, and therefore frequency, into a string, to give it a shorter wavelength, more probing of an objects position, as is done with photons. The string is merely magnified in size, rather than becoming a magnifier.

A combined theory of quantum gravity becomes possible, after all.

String resonances as "elementary" particles.

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A basic value of string theory is that all the supposedly elementary particles may be taken as various vibrational patterns, or resonances, of a single loop of Planck length "string." (To give an idea of this measure, if an atom was expanded to the size of the known universe, the Planck length would scarcely reach the height of an average tree.)

Matter is made up of over a hundred or so atoms, depending on how many protons and neutrons they contain in their nuclei, until their number makes them too unstable to hold together. Their electric charges are neutralised by a cloud of electrons, with opposite electric charges. This accounts for the fact that the electro-magnetic force does not normally prevail over the extremely feeble, but purely attractive, gravitational force, that holds the galaxies together, the planets to the sun and things to the planets.

The electrons are elementary particles. They are mysteriously associated, in inter-actions, with neutrinos, a scarcely inter-acting particle, too light for any mass, it may possess, to be measured as

yet. (After-note, 2002: the neutrino has been found to possess a small mass.) The protons and neutrons are made of combinations of three sub-atomic particles called quarks. (They can also pair to form "mesons.") Quarks are held together by eight possible gluons, as the name suggests.

For some presently unknown reason, the electron, neutrino and a pair of quarks come in two further sets of more massive and ephemeral versions of themselves.

Particles classify into force particles and matter particles. There are four known forces of nature. The gluons are the interactive or force particles for the "strong force" that holds the nucleus of an atom together but does not extend beyond it.

A relatively "weak force" is responsible for radio-active decay of the nucleus. It has its own three inter-active particles, which have been compared to "heavy" photons, in the electro-weak theory that unites the electro-magnetic force with the weak force. The photons are the carriers or inter-active or "messenger" particles of the electro-magnetic force.

All the particles have anti-particles, which are the same but of opposite charge. Neutral particles, like the photon, are their own anti-particle.

If matter particles are hit with higher energies, they produce more massive versions of themselves, which quickly decay into their basic versions. These are called resonance particles, hundreds of which have been found. The name is by analogy with plucking a string to put more energy into it, producing higher resonances.

String theory, due to the extreme tension of strings, predicts an infinite number of higher resonances, just as there can be an infinite number of wave-lengths and correspondingly higher frequencies and the higher energies that go with them.

A vibrating string has more energy with more and, therefore, shorter wave-lengths like choppy seas instead of gentle rollers. Also, there's more energy if the "seas" are higher, that is if their crests and troughs mark higher amplitudes. Special relativity translates energy into mass. So, the mass of an elementary particle can be understood in terms of the vibration pattern of a string.

There is a hypothesised force-carrying particle for gravitational mass, called the graviton. General relativity predicted gravitational waves, too feeble to detect by present devices.

An early success of string theory of particles as resonances was to predict the properties of the graviton. It was also calculated that "the strength of the force transmitted by the proposed graviton pattern of string vibration is inversely proportional to the string's tension." Since gravity is so feeble, the tension worked out at 10^{39} tons (the Planck tension: enough perhaps to work the universe up into a light sweat)!

Not surprisingly, this tension contracts a string loop down to the afore-mentioned Planck length. The energy, for such stiff strings, must be extremely high for them to vibrate at all: on the Planck mass scale.

Greene says, suppose different people were only entrusted with one discrete monetary denomination, corresponding to energy being quantised or permitted only at certain discrete levels (as, in the Bohr atom, electron orbits are quantised). These people are only allowed to pay in whole number multiples of these denominations, as nearly as possible, up to the cost of a purchase (being let off, in so far as their denomination may not fully add up to the full price).

Likewise, strings have a minimum energy denomination proportional to the strings tension, itself proportional to the number of crests and troughs in a vibration pattern, whose energy is a whole number

multiple, determined by its amplitude, of this quantised energy minimum. The typical mass-equivalent of some vibrating loop is 1, 2, 3,... times the Planck mass.

This is about the mass of a grain of dust, massively beyond the masses of elementary particles. Despite the tension of strings, quantum uncertainty ensures some vibration, which is associated with a negative energy that can cancel out the strings Planck energy, manifested in the lowest, or one times Planck energy, vibration levels. This can produce the tiny masses of elementary particles, though not typically.

These cancellations worked perfectly for the vibration pattern hypothesised as the graviton, which is just as well, because the graviton, akin to the photon, as a force carrier, is reckoned to have zero mass.

(String pattern theory can also be related to nature's other three force-carrying particles.)

Superstrings.

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String theory is expected to incorporate the principle of supersymmetry. For the laws of nature to be truly general, they must apply in all manner of circumstances. It should not matter when or where an event happens, from what angle, or in what motion. The law should still be observed to hold.

Laws that respect these conditions are said to exhibit certain symmetries, such as through translations in space and time.

Special relativity is symmetric with respect to observers in relative motion, who can all equally claim they are at rest, relative to any

motion between themselves and other observers. General relativity goes further, as accelerating observers are, in effect, at rest in a gravitational field. This enforces a symmetry that ensures equality of all points of view.

The other three forces are also required to enforce other more abstract "gauge" symmetries. However, there was one further symmetry to do with space, time and motion, namely spin. This is rather as the earth rotates, as well as revolves. Elementary point particles would not seem to have a meaningful spin. But the magnetic properties of electrons, for instance, showed that in a quantum sense they had. Only, this spin did not vary like the skater pulling in her arms to spin faster.

The particle spin is a fixed quantity that goes to define its nature. Its quantum mechanical rate is spin one-half for all matter particles and spin one for three of the force carriers. The graviton would have spin two. String theory actually demands a vibration pattern that corresponds to a massless spin-two particle.

It turns out that spin invokes another symmetry principle of nature: "super-symmetry." Brian Greene says no more about it than: supersymmetry can be associated with a change in observational vantage point in a "quantum-mechanical extension of space and time."

Whatever that means, it implied that particles must come in pairs with spins differing by one half. This would naturally partner the matter and force particles. Unfortunately, the standard model, that unifies three of the four forces (leaving out gravity), matched none of the existing particles. Instead of effectively halving the number of particles, super-symmetry doubled them, by positing a complete new set of partners.

However, super-symmetry pairings of bosons (with whole number spins) and fermions (with half-number spins) give canceling contributions to particle interactions that the standard model can otherwise only make add-up by extreme fine tuning of its calculations.

The three non-gravitational forces, tho of greatly disparate strength, apparently diverged at an early stage of big bang evolution. The quantum flux of virtual particles were found to weaken the intrinsic force of an electrically charged particle they surrounded, until approach at very close distance. The opposite situation held for the strong force and to a lesser extent the weak force, so that at very short distance not greatly above the Planck length, the three forces strengths converge.

But, it was found that extra quantum fluctuations provided by super-symmetric particles would make the convergence perfect.

In the super-symmetric version of string theory, it emerged that the boson and fermion patterns of vibration came in pairs.

Part 2, hidden dimensions.

Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory.

Hidden dimensions.

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In 1919, Theodor Kaluza showed Einstein that general relativity could unite his equation of gravity with Maxwell electro-magnetic equations, by assuming a fourth dimension of space. (With time, this made five dimensions in all.) Oskar Klein suggested the fourth dimension could exist as a curled-up space too small to be observable, perhaps being only of Planck length. A simple analogy is that a garden hose looks like a single dimension from a distance. But close up, the line has thickness admitting of another circular dimension that can be traveled round by an insect.

Kaluza findings didn't fit the experimental data about the electron mass and charge. Eventually, as more particles and the strong and weak forces became known, theorists wondered whether the fault with Kaluza-Klein theory had been too few dimensions rather than too many.

This turned out to be the case for string theory. It had resolved the infinite probabilities, thrown up by elementary point particles, in an attempted quantum gravity theory. But negative probabilities also

kept turning up. And these could only be removed by letting the strings vibrate in nine dimensions. (A tenth spatial dimension was later inferred, making eleven, including time.)

Just as an ordinary string may be allowed to vibrate in three independent directions, a theoretical string may vibrate in nine independent directions. The curled-up six dimensions, that fulfill the equations of string theory, are called Calabi-Yau spaces (or shapes). These shapes may be likened to musical instruments that create particular vibration patterns. The testing question is: how well do these patterns match with the elementary particles found, or capable of being found, by experiment?

Calabi-Yau shapes contain various holes, which themselves have various dimensions, analogous to a do-nut and a double or triple do-nut. A family of lowest energy string patterns is associated with such holes. Multiple holes imply multiple families, like the three families of elementary particles. Just the right shapes are currently still being sought.

String theory predicts other fractional charges than those of the quarks. And experiments finding super-partners would also be relevant to super-strings.

Possible behavior of strings can be described in a simplified form of the large and the hidden dimensions, the afore-mentioned "garden hose" universe, with one familiar line dimension and a hidden, curled-up dimension. The universe may collapse back on itself, from a big bang to a big crunch. This depends on whether there is enough mass in the cosmos to pull it back. The big crunch may resemble the formation of a singularity at the heart of a black hole. All the cosmic mass may be crunching into a single linear stream. It looks to be of one dimension only but has a cylindrical dimension also, like a garden hose.

The difference from point particle physics is that strings can not only move about on this cylinder. They can also wrap around it: they have a winding mode. So, strings have two sources of energy, winding energy, as well as vibrational motion. The latter consist of uniform vibrations and ordinary vibrations. Ordinary vibrations are the kind of oscillations considered above, and are not decisive in this context. Uniform vibrations are "the overall motion of a string as it slides from one position to another without changing its shape."

Uniform vibrations string energies are inversely proportional to the radius of the circular dimension. The uncertainty relation ensures that a constricting hose radius, confining the string, increases its energy.

But the winding energy is proportional to the radius. The greater radius and circumference, the longer the string and the greater its mass, when wrapped around the "hose," and according to how many times wrapped round, giving the "winding number." There are also multiple vibration numbers.

The units are on the Planck scale of length and energy.

The winding energies and vibration energies of the strings compensate each other. You could have a table of winding numbers and vibration numbers for a given radius, and another table of the same, for its inverse radius, giving an over-all correspondence of entries. You could have one universe with a small radius and large vibration energy that corresponded exactly in total energy with another universe, having a large radius and a small winding energy. The two universes are effectively the same, having the same allowed quantum particle energies and charges.

We do not know whether our own universe has a hidden curvature, in the sense that it is too large, rather than too small, for us to see. Space might be traversed as Magellan expedition circumnavigated

the globe. If the universe has a 15 billion light year expansion age to put a radius to, say 10^{61} , Planck lengths, then string theory provides an alternative inverse radius of the universe (10 to the power of minus 61), a radius that is miniscule and contracting, but just as valid in its own terms.

Measuring distance, the familiar way, by light amounts to using light (meaning not-heavy) string modes as probes. In principle, if they were technically able, astronomers might equally well measure distance by heavy wound-string modes. But such probes, being proportional to a cosmic radius would have to be incredibly massive.

Whichever string mode happened to be the light or "easy" mode, it never measures below Planck length. Even if the non-standard measure of distance were adopted, so the radius is below Planck length, the physics is the same as for the complementary table in which the radius is more than Planck length in the conventional measure of distance.

Having discovered that geometrical forms could differ in size, yet be physically indistinguishable, physicists, including Greene, found that the same could be true of different shapes, by orbifolding Calabi-Yau spaces. The number of odd-dimensional holes equaled the number of even ones, in the original, and vice versa. Their totals of holes is equal, implying the same number of particle families, tho their shapes and structures differ.

The shapes agreed on the rest of their physical properties. The beauty of these "mirror manifolds" was that one might be chosen as the possible hidden dimensions creating the sought-after particle masses and force charges. The calculations involved had often been impossible. This had also been the case for the pure mathematical study of Calabi-Yau spaces. But it turns out that the "mirror" partners, figuratively speaking, are often easy to calculate, a source

of progress in string theory, and a return by physicists for what they'd learned from pure mathematics.

In 1987, Calabi-Yau spaces were found to be transformable into each other, according to a mathematical pattern of puncturing and sewing their surfaces. (This was a space-tearing "flop transition," which is sometimes "topologically distinct.") Considering such processes as possible physical tearings of space, mirror symmetry of Calabi-Yau spaces was used to give fuller grounds for the suspicion. An absence of catastrophe in the "mirror" partner would make the space-tearing original physically allowable.

Edward Witten showed that travelling strings, unlike point particles, could protectively encircle spatial tears, with relative possibilities (calculated from Feynman sum-over-paths) that would cancel out a "cosmic calamity."

He and colleagues, including Brian Greene, also showed that spatial tears would leave types and families of particles unaffected. But the energies of the possible string vibration patterns, meaning the individual particle masses, could change. Experiment shows these to be stable. If there is any spatial tearing in the universe at large, it is too slow to be noticable.

Space tearing opens the way for the possibility of worm-holes, the creation of new space joining previously unconnected parts of the universe.

Beyond strings: M-theory.

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Up till 1995, five string theories seemed to be at odds with each other. Only approximate string equations could be found and each of the five theories differed from each other. Their difficulty meant that perturbation theory had to be used, that is a method of successive approximations. A classic example of this is how the gravitational interactions of the solar system are worked out. The sun is by far the most important gravitational mass. So, its effect in relation to the earth is calculated first. This result has to take into account the next most important effect, the moon in gravitational relation to the earth, and so on, until all the significant planetary masses have been allowed for.

The success of perturbation theory depends on being able to order the importance of the effects. Then, dealing with each in turn, one has some idea of how the margin of error should diminish in each successive approximation. Using Feynman diagrams, Richard Feynman, in popular lectures, QED, gives examples of this process of adding successively smaller corrections for all the possible ways a given particle inter-action might take place. Experiment confirmed this quantum electro-dynamics as the most accurate theory in history.

String theory has Feynman diagrams for strings instead of point particles. The Heisenberg uncertainty principles allowance for the creation and annihilation of virtual string pairs, in a string inter-action, is diagrammed as a series of loops between in-coming and out-going strings.

The likelihood of such temporary energy incursions is measured by the size of a "string coupling constant." It would determine masses and charges of string vibrations. Strongly or weakly coupled values, above and below unity, respectively, determine whether it is increasingly likely or unlikely for more and more virtual particles to

appear. Therefore, values, above one, for any of the five string theories, would invalidate the use of perturbation theory.

In 1995, Witten introduced "duality" to get beyond perturbation theory. Of the five string theories, two pairs of them get exchanged by the large/small radius duality, discussed in previous section. Instead of assuming the five theories were independent competitors, all amenable to perturbation theory, by being weakly coupled, it was found that two of the theories could be transmuted into each other, because of a strong-weak duality. Their physics appeared the same, when one theory was weakly coupled and the other strongly coupled.

To this end, use was made of super-symmetry constraints and minimum mass constraints to give clues about particle states (BPS states), for the string theory with a strong coupling constant.

Another of the five theories appeared to correspond to itself when weakly and strongly coupled: it was self-dual.

To complete the link-up of the five theories required a further insight. Super-gravity theories attempted to use super-symmetry to unify quantum field theories with general relativity. It turns out that these point particle theories were approximations to various of the five string theories.

One of the super-gravity theories was in eleven dimensions, rather than ten, and didn't fit in with the existing 10-D string theories. But a string theory, by gradually increasing its coupling constant, and with respect to its BPS states, showed 11-D super-gravity to be a low-energy approximation. The extra dimension emerges with the increasing coupling constant and a string loop turns into a two dimensional cylindrical membrane or a hoop, depending on the string theory.

Higher dimensional membranes, than two, are also possible. But with weak string coupling, all but the strings would be too massive to be produced without enormous energies.

Witten provisionally named the 11-D theory as M-theory, still something of a mystery, but the supposed under-lying theory to the five string theories, incorporating 11-D super-gravity. What was previously an embarrassment of theories, as to the truth, has become an inter-related variety of approaches to make the problems of theoretical prediction more tractable.

Witten demonstrated a primal emergence of the gravitational force from the other three forces, according to their varying strengths when the string coupling constant need not be small.

Black holes as elementary particles.

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Elementary particles and black holes have in common that they are distinguished only by their mass, force charges and spin. A black hole might be a huge elementary particle. A small enough black hole should resemble an elementary particle. But this brought into play the big versus small theory incompatibility between general relativity and quantum mechanics - until string theory, or M-theory.

In the context of space-tearing flop transitions (discussed above) string equations show three-dimensional *surfaces*, as well as beach-ball-like two-dimensional surfaces, embedded in a Calabi-Yau shape, are likely to vanishingly collapse. A one-dimensional string, moving in time, could "lasso" a 2-D sphere, preventing a cataclysmic spatial tear. In this respect, at any instant, a 1-D string (or one-brane)

could only surround a circle; a 2-D string membrane, or "two-brane" wrap round a two-dimensional sphere (like an orange); and a three-brane wrap round a three-dimensional sphere.

Following-up the flop transition for the 3-D sphere (called a conifold transition), it was found that the sphere repairs and reinflates only as a 2-D sphere. This can only be imagined in lower dimensions. A two-dimensional sphere is "a collection of points in three-dimensional space that are the same distance from a chosen center." Its reduction, to a one-dimensional sphere, would be to the points making up the circumference of a circle, which is in two spatial dimensions.

A further reduction would be to a zero-dimensional sphere, "the collection of points in a one-dimensional space (a line) that are the same distance from a chosen center."

The replacement of a 1-D sphere (a circle) with a 0-D sphere (two points) can create a different topological shape. A do-nut has a circle, round its lesser diameter, which is pinched to nothing. The do-nut turns into a crescent or banana-shape, with the two end-points repaired by the two points of a zero-dimensional sphere. The torus cum crescent can now transform into a ball, without further tearing.

This is as if the Klein hidden extra dimensions of space transformed from the one curled-up shape to another, comparably to the normal extended three dimensions changing the shape of the universe from a torus to a ball.

The evolution of the universe may involve such transmutations between curled-up Calabi-Yau spaces.

Equations governing the "branes" showed that, from our limited three-dimensional view-point, the three-brane "smeared" around a three-dimensional sphere, within a (curled-up) Calabi-Yau space, sets up a gravitational field like a black hole.

The space tearing conifold transition from three to two dimensional sphere happens to increase the number of holes by one. These holes determine the number of low mass particles, considered as low energy string vibration patterns. The shrinking volume of the 3-D sphere goes with a proportionate mass decrease to zero: a massless black hole.

The black hole is considered to have under-gone a phase transition to a massless elementary particle, like a photon. String theory has identified them as being made of the same "stringy material." Much as ice under-goes a phase transition to water, they look different but their make-up is the same.

"Hawking radiation" established the "entropy" of black holes. To solve what this disorder was of, string theorists theoretically built

certain extremal black holes by starting with a particular collection of BPS branes (of certain specified dimensions) and binding them together according to a precise mathematical blueprint...

Strominger and Vafa could easily and directly count the number of rearrangements of the black hole's microscopic constituents that would leave its overall observable properties, its mass and force charges, unchanged. They could then compare this number with the area of the black hole's horizon -- the entropy predicted by Bekenstein and Hawking.

Hawking radiation implies the eventual evaporation of black holes. With the gradual shrinking of their areas, their entropy decreases. A current research question is whether order or "information," lost to a black holes gravitational suction, could be recovered from the surrounding area that the shrinking event-horizon has given up.

If the answer is "no," this would further take the edge off a deterministic physics. Quantum mechanics had made, only probabilistic, the totally determinist mechanics, conceived by Laplace.

[PS, sept. 2015: BBC news reported that Stephen Hawking answered "yes," presumably accepting the holographic principle of Leonard Susskind.]

However, Greene doesn't mention chaos theory, which requires infinite accuracy in initial conditions, to predict the oscillations of so simple a classical system as the force-driven pendulum. The Laplace school thought these information feed-ins, to apply physical laws to particular circumstances, would, in principle, determine the evolution of the universe.

Brian Greene discusses other questions, mainly to do with the new subject of *super-string cosmology*.

Already, some possible answers have been put forward. Pending the big bang, all the eleven dimensions of space and time were supposed to be curled up in a universe of Planck scale size. Why did only three dimensions of space extend (thru "inflation" and so forth)? As related, above, strings can wrap round these dimensions. But there are anti-strings, wrapping round "the other way," which annihilate them on contact, producing an unwrapped string, and releasing the dimension to expand. These releasing collisions are most likely in one dimension. At different speeds, two marbles, confined to a line, are sooner or later going to hit. This is less likely of two objects moving freely on a surface, and less likely still for objects moving freely in three dimensions. Thus, the chances were that the fourth and higher dimensions of space were not released from their string wrappings by string pair annihilations.

Alan Guth, in note to The Inflationary Universe, mentions there being about fifty versions of inflation theory, which explains several discrepancies in the earlier big bang model. Greene refers to a controversial pre-big bang version, derived from string theory, by Gasperini and Veneziano, which they hope presages a more inevitable development to inflation.

Closing remark.

Brian Greene, explaining string theory, may be likened to a series of beacon hills that trail off to who knows where. They give you an idea of the general direction string theory is going but they leave in darkness the maze of valleys below, which only whiz mathematicians and physicists can follow, to light up more beacons.

Postscript: Parallel universes.

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BBC tv *Horizon* (14 feb. 2002) featured an astonishing development in linking string theory to cosmology via the concept of parallel universes. The program followed the implication of a unified string theory or M-theory featuring an eleventh dimension and, beyond strings, the existence of membranes of various dimensions.

One of the scientists involved described the arrival of an Italian liner in New York, damaged by a rogue wave. It so happened that a study of the mathematical possibilities of what might happen when the membranes collide in their hyper-space also yielded catastrophic results of the order of the Big Bang itself, or innumerable big bangs.

Classical cosmology closes off possible events, before the big bang, with an infinitely small beginning, a singularity. But quantum theory of the Planck scale of events transcends the big bang, as the outcome of these colliding membranes. As they move, they ripple, so that collisions yield the clumps of matter after the big bang. That is the material universe.

This implies that time precedes the big bang, which is indeed one of an infinite number of different big bangs resulting in an infinite number of possible universes, with different laws of physics.

Hence, string theory has theoretically explained the origin of the big bang by implying parallel universes.

At the time of writing, this is a new theory, which the physics community has yet to decide whether to accept or not. As yet, parallel universes have not been the majority view.

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Brian Greene: The Hidden Reality.

Over the cosmic horizon to an infinite multiverse?

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New Deal universes.

To simplify the mathematics, the cosmological principle assumes that on a cosmic scale the distribution of matter and energy is approximately uniform. Einstein general theory of relativity replaces the Newtonian concept of gravitational force with matter exerting geometrical distortions on space and time. A universe which has a positive curvature of a sphere is finite in spatial extent. A universe which has the negative curvature of a saddle is infinite in extent. A flat universe like a tabletop may be either finite or infinite in extent.

Greene says a uniform presence of matter generally curves space-time but can leave zero space curvature. The curvature of space depends on the density of matter and energy. There did not appear to be enough for more than negative curvature of space. Then the behaviour of galaxies suggested there must be more energy than was visible, short of modifying the laws of motion.

Hence, a supposed "dark energy" suffusing space. This harks back to the idea of a cosmological constant. Einstein found that a positive constant produced a repulsive gravity, that counter-acted normal attractive gravity. Building on this principle, Greene later explains (to my confusion) why Inflationary theory of the Big Bang strongly implies an infinite multiverse.

Thru Inflation, the universe bears the signature of its quantum scale origins. Unlike the determinist measurements of classical physics, the quantum state has the jitters, being subject to random fluctuations. The consequences of a super-small quantum origin have been predicted and found to a surprising experimental accuracy in tiny ripples measured in the cosmic microwave background radiation, a sort of faded flash to the Big Bang.

Ultimately it is the random deviations from a completely uniform distribution of energy and matter, which gravity has gradually worked

upon on the cosmic scale, to separate into larger clumps, the stars and clusters of stars.

From what little I could make out, Inflationary theory seems to be tied up with the idea of a compact region of differing energy potentials. At some points, in keeping with random quantum fluctuations, they seem to have realised their potential like stones rolling downhill. These kinetic energies are likened to bubble universes, much like holes forming in a Swiss cheese.

This is the expanding Inflationary multi-verse.

Tho these are bubble universes, Greene explains how they may be likened to an infinite universe. It has to do with the relative measurement of time, familiar since Einstein special and general relativity, by which observers cease to share the same time, either when relative motion is significant compared to light speed or when gravity is strong, as in bending a light ray moving close to a solar mass.

Observers may co-ordinate their times, according to a shared measure of energy density or mass density. That is because, at any given time, the universe has a fairly uniform density, which becomes steadily more diffuse with the universal spatial expansion.

Reminiscent of Einsteins famous thought experiment of the two observers inside and outside an accelerating lift, there is now an observer outside the bubble universe as well as inside. According to Greene, "what appears as endless time to an outsider appears as endless space, at each moment of time, to one insider.

"Current evidence suggests a small positive cosmological constant, for a universe that seems to be increasing its rate of expansion. The astronomical evidence, taking into account the estimated dark

energy, suggests the universe has zero curvature. It is not known whether this is finite or infinite.

Greene says that since the universe is extremely big any way, you may not think it matters -- but "you should."

Einstein special theory of relativity postulates that nothing can move faster than light. Light bounds our observational universe in a cosmic horizon, analogous to the global horizon that we cannot see over. In an expanding universe, different regions, with their own cosmic horizons, become so separated that they could not possibly influence each other.

All of these independent regions can consist of only a finite number of particles of matter or energy. And they are subject to only a finite number of possible re-configurations.

Greene stresses that "anything but measurements with perfect resolution reduces the number of possibilities from infinite to finite." This is not merely a technical temporary limitation. This is a limitation in principle, according to the uncertainty principle, which specifies how much the gain in resolving the quantum scale measurement of one property is at the expense of another property.

To measure a particle position with complete precision would require infinite energy, which no particle can be given. In an infinite universe, the consequence, of an infinite number of re-shuffles of a finite number of particles, is that eventually all of those independent regions will undergo more or less exact repetition.

Matter over mind hypothesis.

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Greene postulates the reductionist view, common among physicists, that knowing the full arrangement of physical particles fully describes reality.

This is what Francis Crick called The Astonishing Hypothesis. Namely that consciousness is an emergent property of the evolution of the brain.

In other words, we cannot explain it, we just give it a mysterious characterisation, like emergence, and take it as given. But this attitude is what the philosopher, Robert Nozick, was getting at the young Brian Greene about, as Greene re-tells near the end of the book.

The assumption is one of materialistic determinism or that body determines mind. But what of mind over matter? What of the influence of faith, that medicine is pleased to call the placebo effect?

Treating a correlation as a one-way cause must be regarded as suspect. A critic has said, it is like assuming that when a television "dies" that is all there is to it, overlooking that it is just a receiver for a signal, not the signal itself.

Such an unsuspected consciousness "signal" might be labeled unhelpfully paranormal or psychic or spiritualist etc but is no more fantastic or implausible than - indeed seems rather complementary to - some physicists suggestion that the world is no more than the projection, as it were, of a computer simulation, discussed in the same chapter, saw Nozick philosophise.

The world as computer simulation re-opens the way for mind, if doing the computing from a hidden reality. This leads me to suspect that the physics of materialist determinism (matter over mind) is at odds with the physics of the world as computer simulation (mind over

matter) short of some more balanced assessment of the inter-relation between mind and matter.

In the penultimate chapter on creating universes and simulating reality, Greene cites the research into computer simulation of the brain and the prospect for artificially realising emergent consciousness with the acceleration of computing power. While the objective creation of a new cosmos evidently needs energies beyond humanity's grasp for the foreseeable future, the subjective creation of a new cosmos in any robotic consciousness seems a not too distant possibility.

Of course, every new birth into consciousness is a new subjective universe in the multiverse of human and other life forms. We cannot traverse individual universes in a multiverse any more than individual consciousnesses. But Greene is surely right in believing we may infer the existence of other universes in a conjectured multiverse, just as we avoid solipsism by inferring individual consciousness, other than our own.

However that may be, physics may find that reductionism has severe limitations. Take for instance the conclusion of "infinite copies of you and everyone and everything."

Well, we don't have to imagine an infinite journey thru the cosmos for this. Twins are already exact copies. Despite their remarkable psychological affinities, as far as I know, they do not share the same consciousness. Nor, would I guess, any doppelgangers from here or the other ends of an infinite universe. Moving the same model of body, like driving the same model of car, does not make you the same person.

Are we not missing something here? Like a common quality of consciousness that different life-forms filter variously like so many specialised sensory instruments. I suppose I'm saying that it is a

common consciousness that unites life but different bodies that divide it, even if they are physically identical.

String theory, membrane universes and a runaway multiverse.

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The Hidden Reality gives a summary update of The Elegant Universe (reviewed in previous chapter) and The Fabric Of The Cosmos, on string theory.

Nineteenth-century mathematics made an axiomatic modification that was the first revolution in geometry since Euclid. Riemann geometry of curvature made general relativity possible. In the late 20th century, physics led mathematics, when string theory generalised the classic geometry of zero dimensional dots, used to describe elementary particles, into a geometry of one-dimensional strings.

The over-coming of certain mathematical obstacles allowed and encouraged strings themselves to be generalised into higher dimensional membranes. Our own three dimensional universe could be considered as just one membrane among many floating in higher dimensional space.

It has been speculated that these membrane universes might more or less collide. A gentle collision with our membrane universe and another might leave an astronomically observable signature. Less happily, more violent collisions might induce what is being called facetiously Big Splat.

On this basis, a possible mechanism for a never-ending cyclic creation has been worked out, one avoiding the progressive disorder and collapse known as the second law of thermodynamics. The Calabi-Yau spaces of higher dimensions stitched in to the observable three dimensions lead to a stupendous number of possible universes, such that it would be much easier to locate a particular grain of sand on a beach than to find the particular higher dimensional space that would characterise our own universe.

String theorists have tried to show that this superfluity can be accounted for in terms of a theory of eternal Inflation. It seems to have something to do with extending the Swiss cheese model of the multi-verse, so that bubble universes cascade into ever more bubbles. This runaway multiverse involves a mountainous energy multiverse with different valleys, for the extra dimensions different forms, where quantum tunnelling can take place to lower energy levels indefinitely creating bubble universes within bubble universes.

This review is just a sketch caricature of admittedly extravagant speculation. To get the proper explanation, you have to read the book, which does indulge in some soul-searching about whether all this untested abstraction is really science.

Some hopes for theoretical hints are pinned on the large hadron collider experiments at CERN.

Many worlds interpretation of quantum mechanics.

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Not only string theory and Inflationary cosmology have invoked multiverses. Quantum theory has also resulted in a Many-Worlds scenario. Greene discusses the Copenhagen interpretation of a collapse of probabilities, generated by Schrodinger equation of the evolution of a particle property, like position in space and time, into a certain measurement, which when repeated confirms the equations predicted odds.

Neils Bohr drew a line between microscopic and macroscopic objects. But experiments have shown the Schrodinger equations probabilistic (and increasingly difficult) measure to hold for ever increasing collections of particles, without any supposed collapse into one definitive measure of where the object actually is.

Everett sought to get round the ad hoc nature of the Copenhagen interpretation. His proposal raised ad hoc problems of its own. Suppose the Schrodinger equation simply describes the evolution of many worlds represented by the different peaks of a wave-function, with one observer or measurer becoming many, for each peak or spike, tho each of the experimenters proliferating selves are unaware of the others in their many worlds.

The probability of observing a given particle position measurement, say, is determined by the height of the wave spike. This probability weighting of some observations over others undermines the Many Worlds view that all the possibilities are equally real, and that our worlds observer is no more real than other observers in other worlds of possibility.

An Oxford UK suggestion is that the wave-function probabilities are just the odds that one out of any number of possible worlds will be the one you turn-up, for any given measurement.

Gary Zukav, in *The Dancing Wu Li Masters*, notes that the basic quandry of quantum mechanics is that a single foton may interfere with itself. This is a reference to the double-slit experiment. Here one foton at a time can be fired to pass thru either of two closely placed slits such that they arrive at a foto-sensitive target.

If one of the slits is blocked, you'll get a fog of strikes on the side in line with the open slit. And conversely if only the other slit is left open. If both slits are left open, there is not an undifferentiated mass of strikes on both sides of the target. Instead, there is a series of bright vertical bars alternating with vertical dark regions. These resemble the crests and trofs in waves, in this case light waves.

A member of the above-mentioned Oxford group, David Deutsch, in *The Fabric Of Reality*, argues that the interference effect is evidence of the existence of another foton, we cannot see, and therefore indicating another world impinging on our own. The single foton, that the experimenter fires and that goes thru one of the slits, is accompanied by a sort of ghost foton that goes thru the other slit. But the interference effect is reckoned to be just as sure as when two stones are dropped into a pond and their radiating ripples bump into each other.

I also recommend "Quantum Enigma" by Bruce Rosenblum and Fred Kuttner. It is an ever so polite renunciation by veteran physicists (one of them met Einstein as a grand old man) of the doctrine of "Shut up and calculate," in order to more fully expose the outrageous implications of quantum theory.

I must admit I hadn't realised just how extra-ordinary it really is.

Parallel worlds of a holographic universe.

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Greenes chapter nine, on Black Holes and Holograms, starts with a brilliantly simple introduction on the relation of entropy to information, before going on to the conservation of information apparently lost in black holes. Hawking radiation, from the black holes surface area, is where the information is encoded from an object passing the event-horizons point of no return. That is from an outsiders point of view, seeing a gravitationally attracted observer sizzled on the event horizon.

The faller inside would not notice any such spontaneous combustion but the outside observer would only observe this too late to catch up with the inside observer, to confront him with a paradox. The holographic principle expresses this reduction of information from three to two dimensions.

This principle was couched in terms of Maldecana revealing a duality between string theory (as bulk physics in three dimensions) and a specific kind of quantum field theory (as the boundary physics in two dimensions). From Maldecana, it turns out that the math of string theory can facilitate intractable calculations in the quantum theory, which have a direct bearing on experimental observations.

Indirectly, at least, string theory has come of age, as experimental science. The Maldecana holographic result has led to speculation about a whole universe of three dimensional space having a parallel universe on its two-dimensional boundary – whatever that means, as Leonard Susskind would say.

Reviewer comment: multiverse and multichoice.

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Brian Greene says that he avoids the free will debate. The physicists emphasis on multiverse at the expense of multi-choice follows David Hume, who dualised facts and values, rather than Immanuel Kant, whose response identified a unifying graduation between the natural sciences and the moral sciences.

Since the 1970s, I have been more or less vaguely aware that theories of physics, most obviously special and general relativity and quantum theory, seem to have corresponding methods of observational choice. The more general the method of choice, the more comprehensive the tests that physical theory may be subjected to.

Election science is a mathematics and experiments of ethics. Mathematically, I guess “electics” would be another facilitative duality for physics. And experimentally, if the method of choice, the electoral method, is generalised to provide broader observational frames of reference, then their operation is in effect creating new universes of observation, by which this universe is more multiverse than it otherwise would have been.

(That argument reminds me of the reasoning from fuzzy logic.) At least as important would be the strict standards of honesty imparted to electoral method, so sadly lacking in politics - and so destabilising of society, because of the greater power for disaster from an honest science in the hands of a dishonest politics.

CP Snow partly highlighted this, when he talked of The Two Cultures, tho HG Wells anticipated the problem more starkly. In case it be thought that I am being merely moralistic, consider the crudely inefficient voting systems used by most so-called democracies. Consider the current referendum for the alternative vote in the United Kingdom and the stupefying level of debate, especially from the

opposition to progress from the illiterate least choice of an x-vote to counting 1, 2, 3, etc order of choice for candidates.

The explosion of scientific exploration, characterised in this book, stupefying in its potential, is in grotesque contrast to the stupefying atavism of politics. This imbalance is likely to capsize society, if not corrected. The Establishment reaction against democratic progress, from its most crude and primitive form, is inevitably an attack on the progressive mandate of science from taking its nine-to-five honesty outside office hours.

20 April 2011.

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Lee Smolin: Three roads to quantum gravity.

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Four principles.

Quantum theory changed the assumptions about the relation between observer and observed but retained how Newton viewed space and time. General relativity changed the latter but not the former. So, Lee Smolin said, in the year 2000, of the search for the unifying theory of quantum gravity.

Three main groups research this, by way of string theory, which is mainly a development of quantum theory; or loop quantum gravity, based on general relativity with quantum modifications; and a third

small group of originals. Smolin is hopeful that the three groups are converging to enhance each others understanding.

String theory is introduced as the third road to quantum gravity. Having reviewed Brian Greene, on *The Elegant Universe*, I've said no more about it here.

Smolin outlines four principles as a basis for progress. First, consistency, with the definition of a universe, requires that "there is nothing outside the universe." So far, he agrees with his friend and colleague, Julian Barbour (also reviewed in this book). He agrees that time only makes sense in terms of change. But Smolin doesn't treat time as an illusion.

When we look into space we are looking back, also, in time. The light from further away comes from further back in the history of the universe.

Hence, Smolin principle two: in the future we shall know more. Nothing can travel faster than light. But as time passes by, the spot-light, we are in, grows bigger. However, the spot-light is the limit to which we can see. This spot-light is different for different parts of the universe, depending on the time light has had to reach a given spot. (The spot-lights are another word for the "light-cones" familiar to readers of popular books on general relativity.)

No-one can have access to total knowledge about events in the universe. So, we cannot always say whether a thing is true or false, as Aristotle assumed for classical logic. New systems of logic, acknowledging only partial information, dependent on the observers situation, reflect the nature of society. One of these systems, topos theory was found, by Fotini Markopoulou-Kalamara, to suit cosmology.

The quantum theory paradox of Schrödinger's cat, and so forth, make no sense in terms of classical logic or common sense. This is the "super-position principle" that a cat in a box, subject to the chance of a fatal accident, is in superposed states of being alive and dead, until an observer opens the box. Then, the conventional interpretation goes, there is a "collapse of the wave function" of superposed states, resulting in either of the definite states: dead or alive - but not both! (Tho, this paradox begs the question of being "half dead.")

The paradox gives a vivid idea of the observer being outside the observed system. But combining quantum theory with cosmology means that the observer cannot be conceived as existing outside the system, when it is the whole universe.

The Wheeler-DeWitt equations suppose the quantum constraints on the universe. The author played a part in hitting upon their exact solutions, saying it took another ten years to find out what they meant.

Later, Smolin adds, like Douglas Adams, the galactic hitch-hiker seeking the meaning of life:

So conventional quantum cosmology seems to be a theory in which we can formulate the answers, but not the questions.

He goes on that this is not surprising, since the whole universe is not within our purview like a quantum experiment in the laboratory.

Context-dependent theories, such as Markopoulou cosmological logic, applied to quantum theory, provide a reason for observers different points of view, from which the super-position paradox follows. One may observe a system, that includes another observer in a super-position of states. But that observer never so describes himself, remaining outside the system he describes.

And this is never precluded: the system observed can never be the

totality of the universe, because of the light-speed limits on the size of the observable universe.

A slogan for this point of view is: "One universe, seen by many observers, rather than many universes, seen by one mythical observer outside the universe." And this is Smolin principle three.

His fourth principle is: The universe is made of processes not things. Here he clearly differs from Julian Barbour. The world is not made up of a lot of static snap-shots put together like a movie. Taking the analogy further, he points out that real snap-shots decompose. Everything we observe is always changing more or less. In direct contrast to Barbour, Smolin speaks of "the illusion of the frozen moment."

Smolin says we learn about things, just as we do about people, from their stories, which are essentially about causes.

The fundamental idea in general relativity is that the causal structure of events can itself be influenced by those events...The laws that determine how the causal structure of the universe grows in time are called the *Einstein equations*. They are very complicated, but when there are big, slow-moving klutzes of matter around, like stars and planets, they become much simpler. Basically, what happens then is that the light cones tilt towards the matter... (This is what is often described as the curvature, or distortion of the geometry of space and time.) As a result matter tends to fall towards massive objects. This is...the gravitational force. If matter moves around, then waves travel through the causal structure and the light cones oscillate back and forth...These are the *gravitational waves*.

Nevertheless, Smolin says physicists tend to think there is a limit to the number of events in a process. And that space and time are not

continuous but form into fundamental discrete units (rather like the quantum, h , is such). (Barbour "snap-shot" reality may yet get a look in.)

Black hole thermo-dynamics.

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This is the first road to quantum gravity.

In accord with Einstein equivalence principle, a space-ship can maintain a position out-side the event horizon of a black hole, with a force of acceleration matching the holes force of gravitational attraction. The horizon is a "curtain" of unseen photons that are just unable to escape the black hole. Hence the name: this curtain and everything behind it is a hidden region.

In general, wherever a light source cannot reach an observer, that is in a hidden region to that observer. Even far away from any black holes, a space-ships acceleration will create a hidden region behind a horizon of photons that cannot be seen from the ship, because its acceleration has been enough to put them out of reach, even tho the ship itself cannot reach light speed.

Bill Unruh predicted that the energy source provided by the acceleration will activate the ships particle detectors to register quantum fluctuations, in the vacuum of space, between electric and magnetic fields. By Heisenberg uncertainty relation, both fields cannot be measured, in a region, as zero.

Another principle, that of quantum correlation, predicts the fluctuations will be random, which implies heat, detectable as a

temperature proportional to the ship's acceleration. A pair of spontaneously created particles, like photons, within the limits allowed by the uncertainty relation, are, in effect, a system, which can only be properly understood as a whole. A change in the condition of one photon, such as its polarisation, will affect the polarisation of the other, conserving the pair as a system, even though they may have moved too far apart for a light signal to have been quick enough to effect this correlation.

The accelerating space-ship detects photons correlated with photons in its hidden region, denying their systemic information and, in effect, surrounding the ship with a random "gas" of photons.

This "Unruh law" is the study of quantum gravity's first prediction.

The entropy of the gas is the measure of all the positions and motions of molecules in the gas. This measure is made in terms of information theory that counts in sequences of bits, as the number of answers to yes/no questions, like a digital computer. This information is missed when taking only temperature and density averages used in statistical mechanics or thermo-dynamics.

The photon gas randomness results from the missing information, in the accelerating space-ship's hidden region, which the entropy measures as exactly proportional to the area of the horizon boundary between the ship and its hidden region.

This is Bekenstein law, the second prediction of quantum gravity.

The "Bekenstein bound" is a limit on the information that can be contained in any region. This finite capacity for information implies space is discrete, on the Planck scale.

Thermo-dynamics states an entropy law of the over-all increasing disorder of things, which gives a sense of time being irreversible. Black holes have this character, because nothing falling in one can

ever get out. Consequently, Stephen Hawking showed, that, like entropy, the area of a black hole can never decrease.

In the case of black holes, the random photon gas is known as Hawking radiation, when pairs of virtual particles, created from the quantum fluctuations of space, are split near the event horizon. One partner may fall in the black hole, the other be shot off into space. The random radiation meant a black hole would give off (very minimal) heat, the result of missing information from black-holed partner particles, which showed a black hole could have entropy.

The Hawking law is a third prediction, that the temperature of a black hole is inversely proportional to its mass. Hawking radiation means a black hole will lose mass, therefore lose area, and lose entropy. The outside world should gain the entropy, so there is no over-all loss, contrary to thermo-dynamic law.

A black hole of the sun's mass would take ten, to the power of 57, times the fourteen billion year-age of our universe, to evaporate. So, the nature of the information trapped in the black hole, and possibly released by evaporation, is of decidedly theoretical interest.

The information lost in a black hole, is measured in discrete units of atoms and photons. But the measure of the black hole entropy is in terms of the continuous area of its horizon. The three roads to quantum gravity are converging on an atomised or quantised concept of space and time having fundamental units.

The Bekenstein surprise that information capacity of space is proportional to a region's area, and not its volume, makes one think of a holograph. This is a two dimensional picture that encodes three dimensions depending on which angle you look at it.

The weak holographic principle treats the surfaces of things as

screens with finite capacities to channel information from observer to observer.

Finally, Smolin discusses frontiers of knowledge, including several versions of a holographic principle, for which there are great hopes, as a new founding principle of quantum gravity, as the uncertainty relation is for quantum mechanics, and the equivalence principle for general relativity.

Loop quantum gravity.

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The atomic nature of thermo-dynamics was not accepted in the nineteenth century. Einstein 1905 paper explained Brownian motion in terms of collisions from the random motions of atoms or molecules. Another of his 1905 papers also explained light atomically in terms of light-quanta, carrying a unit of energy proportional to the light frequency.

A theory of quantum gravity will likewise quantise space and time.

Chapters nine and ten are the core of Smolins book, because they describe him working with many colleagues, the world over, to come to loop quantum gravity -- the second road. Because he is telling a story, this reader was given an illusion of understanding their progress, which clearly depends so much on professional co-operation.

With apologies, this amateur reviewer merely makes a few notes, by way of memoranda, hoping they are not too misleading.

Of the four known forces of nature, the strong force binds the three quark constituents of particles, like protons and neutrons, that themselves make up an atomic nucleus, whose cloud of electrons, in turn makes up an atom. Electrons are more or less easily stripped from atoms.

But energy directed at freeing quarks from protons only seems to add to the length of an apparent string, joining the quarks, without diminishing its strength. This "quark confinement" has an analog in super-conductive metals at temperatures a few degrees above absolute zero. Normally, magnetic lines of force are continuous, though the size of iron filings, put on paper around a magnet, show discrete lines. Only in a super-conductor are magnetic field lines quantised, carrying a whole number multiple of a basic unit of magnetic flux.

The electric force is closely related to the magnetic force. Together they comprise one of the four forces of nature. And the theory of the strong force was based on an analogy with electric charge, except that quarks are distinguished by having three distinct charges (three "colors").

(Quantum Chromo-dynamics, QCD, is the analogous theory to Quantum Electro-dynamics, QED.)

The color-electric lines of force, holding the color charges of quarks together, could become discrete like a line of magnetic flux in a super-conductor. The guess is that "empty space is a color-electric superconductor." The complete lack of electrical resistance found in super-conductivity is as if the temporary quantum fluctuations of energy in a vacuum also had large-scale effects.

The stretched "strings," between quarks, have been thought basic entities, rather than just lines from force fields. Other physicists thought both points of view valid. One of the latter was Smolin after hearing of "Wilson loops." Ken Wilson assumed a discrete space

based on a grid or lattice, of units far smaller than a proton diameter. Quarks could only be on the nodes and strings on the edges of the lattice.

Using simple rules, the three-color-electric field was described by the movement of discrete field lines along the discrete space. Given only one charge, like normal electricity, the field lines tended to lose their discreteness by joining to behave like continuous electric field lines. But, given three charges, as with quarks, the field lines always stayed discrete, no matter how big they got.

The next step would be to dispense with the grid, as a fixed background, leaving only the "quantised loops of electric flux" to characterise a discrete space. Building on the work of many colleagues, as always, the authors work included using Polyakov expressions for the quantised loops of electric fields as the quantum states for a geometry of space-time, given in a simplified version of the Wheeler-DeWitt equations.

It would not matter where these back-ground independent loops were in space. That would have no meaning, because space itself would be defined by the inter-relations of the loops, their intersections, knots, links and kinks.

The idea of discrete lines of force, taken from that in a superconductors magnetic field, quantised areas into discrete units, on the Planck scale, each carrying finite amounts of area; likewise for volume.

Loop states could be arranged in "spin networks," previously derived by Roger Penrose, one of the originals, amongst the groups researching quantum gravity. The various lengths, of the joined lines in the net, are integers coming from quantum theorys allowed spin states of particles.

Arduous translation, of loop quantum gravity into spin networks, revealed:

...each spin network gives a possible quantum state for the geometry of space. The integers on each edge of a network correspond to units of area carried by that edge. Rather than carrying a certain amount of electric or magnetic flux, the lines of a spin network carry units of area. The nodes...correspond to quantised units of volume. The volume contained in a simple spin network, when measured in Planck units, is basically equal to the number of nodes of the network.

Theorems show "that the spin network picture of quantum geometry... follows directly from combining the basic principles of quantum theory with those of relativity."

"Connections have been discovered to... such as Alain Connes' non-commutative approach to geometry, Roger Penrose's twistor theory and string theory."

Giovanni Amelino-Camelia suggested a test whether the geometry of space is discrete on the Planck scale. A photons path should be deviated, from its expected classical path, by interference effects of its associated wave being scattered by the discrete nodes of the quantum geometry. Altho the effect is extremely small, it is cumulative and might be detectable over large fractions of the observable universe.

How probable would it be that this atomic structure of space yielded the Euclidean space we see? The universe under-went a phase transition, like a gas turning to liquid. The early plasma of photons "froze" into matter. A smoothly featureless three-dimensional geometry resembles the crystalline atomic structure of a metal with

its smooth surface. For the atoms of space to organise themselves over the cosmos, so highly, seems fantastically improbable.

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Lee Smolin: the trouble with physics.

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"we have failed."

"We have failed" is Smolin verdict on his generation of physicists to sustain the momentum of scientific progress, at a fundamental level.

Lee Smolin has written a good book on scientific method in current physics. He doesn't explain the theories in detail but he gives you a good insight into the difficulties of giving coherent explanations of nature in all its depth. It doesn't matter that research will soon render much of this explanation out of date.

There is the Large Hadron Collider coming online at CERN. And there is an increasing ability to see events at energy scales, previously thought unreachable, by the use of astronomical data, as if from cosmic experiments. But the beauty of the book is in understanding physicists decisions with the information currently at hand.

I wouldn't recommend Smolins book as a primer on scientific method, because the physics of string theory, and the like, is so far out. I would recommend it as essential reading for someone who has progressed in learning scientific method, with respect to more familiar fields of knowledge.

Smolins work is based on a methodological decision that it is high time for physicists to diversify from string theory. One of the controversial ideas, he had a hand in, was so-called Doubly (or Deformed) Special Relativity (DSR). This was to over-come the problem that Special Relativity, in its current formulation, does not allow different observers to see the fundamental quantum unit of length, the Planck length, as the same length. Observers moving

ever closer to light speed, relatively to the Planck measure can always measure it as shorter.

The Planck length is a universal quantity of length as light speed is a universal quantity of speed. Observers do agree when they measure light speed and when something is moving less than light, they agree to the extent that it is moving less. DSR re-formulates SR so that observers agree on the Planck length and when anything is more than the Planck length.

In a later version of DSR, the cosmic creation began with a concentration of energy that started fotons with infinite speed, which decreased in the expansion called the Big Bang. Only the low energy fotons, we know in our much-expanded universe, are reckoned to have constant speed. This modification allowed theorists to do away with the SR paradox of a varying Planck length with respect to constant light speed.

DSR with a variable speed of light is a possible replacement for Inflation theory (an enormously accelerated initial expansion of the universe beyond that first thought in the Big Bang theory) as an explanation of why the universe is causally connected at the same temperature. This wouldn't be possible if nothing could move faster than the currently observed constant speed of light.

The standard model of theoretical physics has held up well in experiments. But in 30 years, there has been no new theory to replace it. String theory, which mathematicly derived the known particles, as well as the yet unobserved graviton, as modes of minute vibration, and its developments in extra dimensions as "branes," have not so far fulfilled the high hopes for it, as a "theory of everything."

Smolin repeats his objection to string theory that it has been slow to become a background-independent theory, like general relativity, the physics of the very large. It would be sensible for string theory to have this property, if it is indeed to reconcile general relativity with quantum theory, the physics of the very small. Smolin calls this problem, of quantum gravity, the first great problem of theoretical physics.

The lesson of general relativity is that space and time are not a passive back-ground according to any number of assumed geometries. Instead, space-time geometry changes its shape in relation to the presence of matter. Having an infinite number of possible back-grounds has weakened the predictive power of string theory, because when anything doesn't fit, the back-ground can always be changed.

In this respect, Smolin talks about doing science the old-fashioned way. This means abiding by the rules of scientific method (a term he denigrates), such as that theories should come up with testable predictions.

Smolin believes the second great problem of physics is to make sense of quantum mechanics or replace it with a more sensible theory. Neils Bohr said that if anyone thinks they understand it, they don't.

Problem three is to unify the particles (leptons and quarks are at present the two known kinds) with the four known forces (gravitational and electro-magnetic forces, weak and strong nuclear forces). Theoretical developments, like super-symmetry, have depended on creating a lot of unknown partner particles. The LHC at CERN might turn up new particles of theoretical relevance. But this is only a hope, not solidly backed-up predictions of the kind made by the Salam-Weinberg theory of the unified electro-weak force.

Murray Gell-Mann used group theory to explain the abundance of new particles observed with higher energy accelerators. They produced more unstable versions of the proton and neutron. There was high hopes of building on Gell-Mann's work with symmetry groups to predict rare decays of the proton. Even if an average proton was so stable as to last longer than the age of the universe, a few of their multitude might be detected to decay.

By 1990 (in a Physics anthology essay, edited by Paul Davies) Abdus Salam was already wanting a moon base for more suitable conditions to measure the rate of proton decay and give a clue to what class of symmetry group applied to the real world.

Since 1975, the standard model has explained known particles and forces (except gravity) but has to adjust their relations with the help of about twenty constants, which are just given experimentally. Their theoretical justification is big problem four.

Problem five is to explain dark matter and dark energy, or whatever is the correct explanation of the discrepancy in astronomical mass measurements.

There is a suspicion of dark matter, as the galactic orbits of stars give a greater mass than the number of stars and light matter observable would warrant, according to gravitational law. Likewise, a uniform dispersal of dark energy would account for the acceleration rate of the universe-expanding dispersal of galaxies.

"Dark" matter or energy doesn't interact with the electromagnetic force, the medium of light.

If dark matter accounts for about 26% and dark energy, 70%, this leaves 4% for the matter physicists understand by their standard model. This unknown matter seems to be the only alternative to abandoning Newton laws of gravity and their modification by Einstein theory of general relativity.

Besides dark matter and energy, the discovery that neutrinos have masses, are the only two recent finds Smolin credits as major. According to him, at no time for two hundred years has physics had such a dearth of major advances, as in the last thirty years.

[Since this review, CERN have discovered the Higgs particle, crucial for confirming the Standard Model.]

Making research more effective.

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Never mind, the biggest achievement of physics for science, in their so-called failed period was the democratic inauguration at CERN of the World Wide Web, the most revolutionary advance for both the acquisition and dissemination of knowledge, since printing was invented.

If you want to publish ideas, you don't have to under-go the censorship of peer review. Tho not an academic, I have, on rare occasions, fallen foul of this closed shop. I don't mean to say my work was necessarily deserving of appearing in some journal. I mean that the decision is held in secret, so you cannot appeal to outside opinion in defense of your views against arbitrary decisions of the editors expert. It can be like talking to a brick wall or the Inquisition. When anonymous, peer review can be a hooded Inquisition as well. It's not science, it's authority.

Admittedly, the odd Guardian journalist says: Sorry the Web hasn't made a difference. And she has some grounds for saying so. Authoritarian politics continue to defy human rights and, in so-called democracies, hold out against electoral justice.

The last part, of "the trouble with physics," is concerned with reforms to academic life to make research more effective. One chapter is called: How do you fight sociology?

He is not talking about the discipline of that name. He is really talking about tribalism. He reckons there is a string theory tribe.

The work of physics is so hard and the competition is so fierce that students have to resort to other methods than sheer brilliance to keep their job. Following the intellectual fashion, heeding the seniors, knowing how to pitch for grants are also useful talents in the scramble.

One sees this in the popular arts, when even geniuses are not averse from looking over their shoulders to see what fashion is coming next. Alright, I'll tell you the instance I'm thinking of. In the mid-1960s, The Beatles had gone all flower power and transcendentalism. Then there was just a hint of a few rock 'n' roll songs coming back into the charts. Suddenly, John Lennon was saying: We are all rockers really. We're just rockers. And their songs went back to a simpler style more like the 1950s.

Another critical chapter, How science really works, was not an expected exposition of scientific procedure but a description of how scientists assess each other. The time-consuming system of committees and informers reminded of the Soviet arts bureaucracy, which usually didn't get round to publishing works suspect as to ideological purity.

Solzhenitsyn gives an irreverent version of the ordeal, in The Oak and the Calf. Elsewhere, more credit is given to the daring of an editor like Alexander Tvardovsky, he portrays so affably.

In the chapter on What is science? Smolin sets out a scientific ethic, which he hopes might help to keep research on course. This

involves a common adherence to reason and evidence as a means of arriving at decisions as to the truth.

Thus the scientific community is a democracy not beholden to authority. At least this is the theory. In practise, status and track-record weigh in the balance.

Smolin says that science is not like a democracy in that it doesn't abide by majority rule.

Mill said: democracy is not majority rule or maiorocracy. This is the undeveloped notion of democracy that still prevails in the world. It is not Smolins fault that he shares this view. When he says science tries to achieve a consensus, that is what the developed conception of democracy does.

The difference between majority rule and consensual rule can be re-stated precisely in terms of the difference between single majority rule and multi-majority rule. The latter is a rationalisation of the former, basicly because choice, like motion, is relative, which means in practise a transferable vote.

(I explain this in my book, Scientific Method of Elections.)

It is common sense that government must be by democratic consensus if it is to work. This is most obviously shown by considering what would happen if world government were to be run on a majority basis. It would be impossible for either the East or the West to agree to let the other monopolise government, even if they could trust each other to do so for only a limited period.

A few mature democracies, like Switzerland, recognise this and have power-sharing governments. Or in the case of Northern Ireland, the long-suffering people of Ulster have had to endure a drawn-out civil war, while the consensual principle was being accepted. (And little wonder, when Britains two-party state still won't accept it.)

Consensus couldn't work well, without the most effective electoral

machinery to make this possible: the single transferable vote (STV). (Tho, Ulster still does not have STV in UK general elections.)

My main criticism of Smolins book is his discounting of scientific method for his scientific ethic. Reducing scientific method to a bare scientific ethic might be compared to reducing relativity theory to the meaning that all motion is relative. Scientific method is really the study of what reason and evidence amount to. Knowing how to think is an art, which improves with practice, like any other art. And scientific method is a guide or a set of instructions to mastering this art.

Scientific method, as the study of what reasoning and evidence collecting entail, should be the defense of the community against arbitrary authority that is not answerable for its decisions and can over-rule popular opinion, because of the unscientific disregard for genuine democracy.

Currently some governments are trying to push the dangerous, expensive and obsolete vested interest in nuclear power. The physicists utopian promises, that massively over-subsidised fission energy for over 50 years, were a disastrous blunder, which the world may yet suffer more grievously.

[This was written before the Fukushima disaster. Just how disastrous this was, or could be, has not been well broadcast. Further nuclear disasters are likely, given unteachable governments.]

The International Panel on Climate Change has properly downplayed nuclear power. Why was this voice of the scientific community not heard loud and clear before the peoples and their parliaments?

Smolin repeats Feyerabend anathema that there is no such thing as scientific method. (Notably in an art catalog on art, science and democracy.) This is about as sensible as saying there is no such

thing as physics because it hasn't a theory of everything. Who on earth would expect the discipline of scientific method to provide a definitive guide for scientific discovery?

Of course, Smolin heroes, Einstein and the rest of them, had to use what methods or devices they could to make their discoveries. If they had no such need for ingenious improvisation, then scientific method itself would be the theory of everything. That doesn't mean to say that scientific method or the philosophy of science is non-existent, any more than is physics or natural philosophy.

Smolin believes that the lack of theoretical progress in physics is because they are missing something. One thing I can tell them for sure is that they are too dualistic with regard to science and ethics. Immanuel Kant refuted David Hume, for radical scepticism against deriving values from facts.

The academic community, both in the natural sciences and the social sciences, or as Kant called them, the moral sciences, have divided the world in two, which naturally prevents them from understanding the whole world.

The Smolin "scientific ethic" reminds of HG Wells, who promoted a Charter of Scientific Fellowship, in 1942, which recognises "the democracy of science."

Wells also saw that democracy is scientific, in the work started by John Stuart Mill to promote the transferable vote as the scientific method of elections, beyond all the rival and ruinously wrong electoral methods, as theories of choice.

Smolin may think physicists have "failed" in the past 30 years. If true, it is still as nothing compared to the academic community's 150 year failure to recognise the scientific conception of democracy. Within six months, John Stuart Mill had noticed how its opponents projected

the faults in their own beliefs onto the Hare system, fore-runner of the single transferable vote.

Mill never belonged to the conservative academic community, tho British universities used System Of Logic as their standard text on scientific method, for fifty years.

Right on Smolins door-step, at the Perimeter Institute, the Ontario Citizens Assembly on Electoral Reform gave an unedifying example of what happens when so-called world experts - the Perimeter Institute would call them, like themselves, "global souls" - flown in to coach the Assembly, abandon all cognisance of scientific method or the search for truth. They merely followed an official line that no voting system is, on balance, better than another. Ontarians should just choose the one that suited them best.

Such an attitude is the end of science as well as of democracy.

Not for a moment would Smolin tolerate the idea, in physics, that no theory is decisively better than another and you just believe what theory suits you subjectively and arbitrarily "as Ontarians," without the need to put theories to the test of a principle, in this case, democracy. Yet that is what the Ontario Citizens Assembly was told by politicians and academics supervising them.

A British Columbia physicist, John Huntley, from Simon Fraser University, was curious about the BC Citizens Assembly choice of a system called the single transferable vote. On finding out what it was about, he thought everyone would see that it was easily the best method. When he found they didn't, he tried to promote it. He and a colleague wrote a good submission to Ontario Citizens Assembly.

18 april 2008.

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A plea to automate and test Binomial STV.

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A three-day course, while our lecturers were absent, was all the education in computer programming, that we received as college students back in the 1960s. Since then, the basic skills have become part of the new maths, or so I fondly believe, that is taught to school-children at as early an age as possible.

At any rate, you occasionally hear of teenage computer geniuses.

All that passed me by. If I was starting off today, in my line of study, it would be an essential attainment. Anyway, there are plenty of people about, that are much better at it, than I ever would have been.

Here, I'm trying to draw their attention to writing a program for Binomial STV. If, by any chance, you happen to be familiar with the program for Meek method of STV, then you would be in an ideal position to automate Binomial STV.

Meek method is already used for some official elections in New Zealand. It is also the election method of such expert bodies as the London mathematical society, the Royal statistical society, and the British computer society.

It is possible that someone amongst any number of skilled individuals and expert organisations might conceivably take an

interest in programming Binomial STV. So, it is always advisable, when answering such calls for help, as this, to make sure that the call has not been answered, since the call was written. I probably shall go on approaching possible candidates.

One of the main drawbacks of the traditional Single Transferable Vote, and also Meek method, is that it does not fully apply to single seat elections.

There are no surplus votes to transfer, from a candidate already elected on a quota, to a next preferred candidate, taking a second seat, because there is only one seat to be taken!

Thus, single seat elections rob STV of a principal advantage over other voting methods. In effect, traditional STV is reduced to the so-called Alternative Vote, sometimes known as Instant Run-off Voting. If no one candidate wins over half the votes, then the candidate with least votes has to step down, in favor of his voters next preferences, till some candidate gets an overall majority.

The advantage of Binomial STV is that it never finally excludes or disqualifies any candidates, even in single-member constituencies, until the final count, which is an average of systematic recounts of preferences, in an election count, and reversed preferences, in an exclusion count.

For over a decade since inventing Binomial STV, I didn't ask anyone to write the program. Now I think it is ready, for two reasons.

The first reason.

The bi-, in binomial, refers to a reverse preference count, as well as the normal preference count.

I recently overcame the problem of establishing the relative

importance of the preference count and the reverse preference count. This is done by counting all the preference abstentions.

In a typical election, voters will abstain on later preferences. A reverse preference count, that does not take this into account, would effectively give the same importance to the first reversed preference, in an exclusion count, as is normally given to the first preference in an election count. This is even when the first reversed preference is most probably not the least possible preference that a voter could make among all the candidates.

In a Binomial STV count, returning a blank ballot paper is equivalent to the “none of the above” option. But a preference abstentions-inclusive Binomial STV count is actually more discriminating, as to lack of popularity among the candidates, because every preference, not filled-in on the ballot paper, may go towards the quota for an unfilled seat, in the contest.

My second reason for this formal request to programmers or coders is that Binomial STV may have research applications beyond political elections. Binomial STV need not stop at a simple combination or averaging of a preference count and a reverse preference or un-preference count. That is only a first order Binomial STV. (Traditional STV is a zero order or uninomial STV, perfectly adequate for practically all political elections.)

My free e-book, Scientific Method of Elections (which belongs to a series of works referenced at the end of this book) explains how Binomial STV can conduct a second order count of preferences and un-preferences, or a third or any higher order count, according to the binomial formula. I realised that this progression made for the systematic mining of preferential information.

This was before becoming aware, recently, that there actually is a data-mining community, experimenting with more satisfactory voting systems, than simple plurality, for extracting information from data-bases.

(Again with reference to my above-cited e-book) Binomial STV is a continuation of Meek method. Unlike traditional STV, Meek method takes into account extra preferences gained by candidates already elected, by readjusting their keep values. Binomial STV calculates the keep values for every candidate, whether in surplus or deficit of the quota.

Being in deficit of the quota, in an exclusion count, may help a candidate become elected, when the election and exclusion counts are averaged.

Binomial STV would leave out Meek method of reducing the quota as preferences run out. By contrast, Binomial STV counts preference abstentions.

A greater and more rational use of (preferential) information sums up the case for computer automating Binomial STV.

It would also be interesting to compare results, using the Harmonic Mean quota (which I have also advocated, as explained in above-mentioned book) as distinct from the Droop quota, or even the Hare quota.

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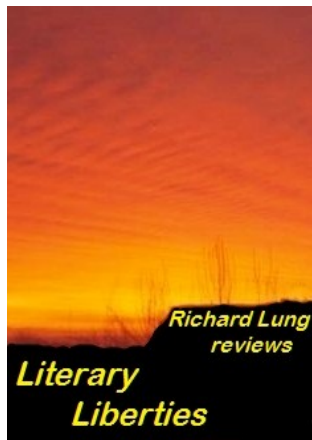
Guide to three book series by the author.

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The Commentaries series

Commentaries book one:

Literary Liberties



Literary Liberties with reality allow us to do the impossible of being other people, from all over the world. Our imagined other lives make the many worlds theory a fact thru fiction.

This book of books or illustrated reviews span fiction, faction and non-fiction.

It goes some way to substantiate the belief of Benedetto Croce that history is the history of liberty.

I only wrote of books that I appreciated, so that I could pass on that appreciation to others. It must be admitted that I went with novels

that looked over horizons confined to family values. (Family is, of course, a basic trial of liberty, compromised by obligations to partner and children.)

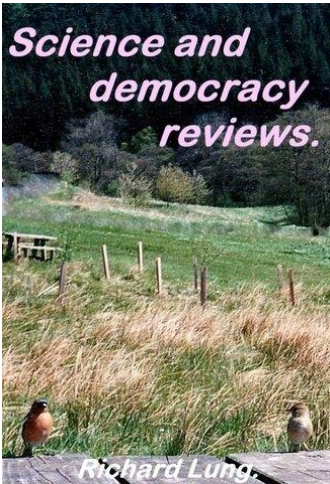
Likewise, these reviews themselves need not be bounded by the horizons of literary criticism but reach out to solutions for the problem novel or the non-fiction book with a cause.

In promoting others writings, I hoped to promote my own, any-way, the liberal values that inform my writings. It took a lot more preparation than I had anticipated. This is usually the case with my books.

Literary Liberties is the first of a short series of Commentaries. This author also has a Democracy Science series. The series of Collected Verse was the first to be completed.

Commentaries book two:

Science and Democracy reviews



As they separately pursue their shared ethic of progress, scientific research and democratic reform conduct themselves as two different journeys, both here followed, as the evidence mounts that they depend on each other to meet the stresses that survival poses.

Works reviewed and studied here include the following.

The physicist, John Davidson under-took an epic investigation into the mystic meaning of Jesuses teachings, as for our other-worldly salvation, supplemented by a revelation in non-canonic texts of the gnostics.

The Life and Struggles of William Lovett, 1876 autobiography of the "moral force" Chartist and author of the famous six points for equal representation.

Organiser who anticipated the peace and cultural initiatives of the UN, such as UNESCO.

Jill Liddington: Rebel Girls. Largely new historical evidence for the role especially of working women in Yorkshire campaigning for the suffrage.

"How the banks robbed the world" is an abridged description of the BBC2 program explanation of the fraud in corporate finance, that destroys public investments.

David Craig and Matthew Elliott: Fleeced!

How we've been betrayed by the politicians, bureaucrats and bankers and how much they've cost us.

The political system fails the eco-system.

Green warnings, over the years, by campaigners and the media, and the hope for grass roots reforms.

From Paul Harrison, how expensively professionalised services deprive the poor of even their most essential needs. And the developed countries are over-strained, on this account, drawing-in trained people from deprived countries.

Why society should deprofessionalise basic skills important for peoples most essential needs, whether in the third world or the "over-developed" countries.

The sixth extinction

Richard Leakey and other experts on how mankind is the agent of destruction for countless life forms including possibly itself, in the sixth mass extinction, that planet earth has endured in its history.

Why world politicians must work together to counter the effects of global warming.

On a topic where science and democracy have not harmonised, a few essays from 2006 to 2010, after "nuclear croneyism" infested New Labour and before Japans tsunami-induced chronic nuclear pollution. There's a 2015 after-word.

Some women scientists who *should* have won nobel prizes. Lise Meitner, Madame Wu, Rosalind Franklin and Jocelyn Bell, Alice Stewart, to name some. Reading of their work in popular science accounts led me, by chance, to think they deserved nobel prizes; no feminist program at work here.

Julian Barbour: *The End Of Time*.

Applying the Mach principle, to an external frame-work of Newtonian absolute space and time, both in classical physics and to Schrödinger wave equation of quantum mechanics, by which the universe is made properly self-referential, as a timeless "relative configuration space" or Platonica.

Murray Gell-Mann: *The Quark and the Jaguar*.

Themes, including complex systems analysis, which the reviewer illustrates by voting methods.

Brian Greene: The Elegant Universe.

Beyond point particle physics to a theory of "strings" that may underlie the four known forces of nature, and its material constituents, thru super-symmetry, given that the "super-strings," as such, are allowed to vibrate, their characteristic particle patterns, in extra hidden dimensions of space.

Brian Greene: The Hidden Reality.

A survey of the more extravagant physics theories that have invoked

many worlds or a multiverse..

Lee Smolin: Three roads to quantum gravity.

Reviewing the other two roads (besides string theory) namely black hole cosmology and loop quantum gravity. All three approaches are converging on a discrete view of space and time, in basic units, on the Planck scale. General relativities space-time continuum is being quantised, rather as nineteenth century thermo-dynamics of continuous radiation was quantised.

Lee Smolin: the trouble with physics.

Impatience with the remoteness of string theory and hope for progress from theories with more experimental predictions. How to make research more effective. Smolin on a scientific ethic. Reviewer criticises the artificial divide academics make between science and ethics.

Commentaries book three.

If and when time allows, it is intended to gather a final note-book, consisting largely of tables, graphs and diagrams, too large to conveniently include for e-book readers...

The Democracy Science series.

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The Democracy Science series of books, by Richard Lung, also is edited and renovated from this authors material on the Democracy Science web-site.

Book 1: Peace-making Power-sharing.



The first, of two books on voting method, has more to do with electoral reform. (The second is more about electoral research.)

"Peace-making Power-sharing" features new approaches to electoral reform, like the Canadian Citizens Assemblies and referendums. I

followed and took part in the Canadian debate from before the assemblies were set-up, right thru the referendums. This was a democratic tragedy and an epic in the dashing of idealistic hopes.

Some developments in America are reviewed.

The anarchy of voting methods, from the power struggle in Britain, is investigated over a century of ruling class resistance to electoral reform.

A penultimate chapter gives the simplest way to explain transferable voting, on to the more formal treatment of a small club election.

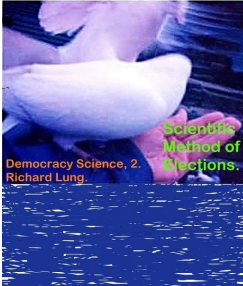
The last chapter is the earliest extant version of my work on scientific measurement of elections (in French).

Peace-making Power-sharing

from Smashwords in epub format: [here](#) free.

*It is also available for Amazon kindle, [here](#).
(Amazon charge a nominal amount, currently.)*

Book 2: Scientific Method of Elections.



The previous book had a last chapter in French, which is the earliest surviving version of the foundation of this sequel, Scientific Method of Elections. I base voting method on a widely accepted logic of measurement, to be found in the sciences. This is supported by reflections on the philosophy of science.

The more familiar approach, of judging voting methods by (questionable) selections of basic rules or criteria, is critically examined.

This author is a researcher, as well as a reformer, and my innovations of Binomial STV and the Harmonic Mean quota are explained.

This second book has more emphasis on electoral research, to progress freedom thru knowledge.

Two great pioneers of electoral reform are represented here, in speeches (also letters) of John Stuart Mill on parliamentary reform

(obtained from Hansard on-line). And there is commentary and bibliography of HG Wells on proportional representation (mainly).

Official reports of British commissions on election systems are assessed. These reports are of Plant, Jenkins, Kerley, Sunderland, Arbuthnott, Richard, and (Helena Kennedy) Power report.

The work begins with a short history on the sheer difficulty of genuine electoral reform. The defeat of democracy is also a defeat for science. Freedom and knowledge depend on each other. Therein is the remedy.

Book 3: Science is ethics as electics.



Political elections, that absorbed the first two books in this series, are only the tip of the iceberg, where choice is concerned. Book three, in preparation, intends to take an electoral perspective on the social sciences and natural sciences, from physics to metaphysics of a free universe within limits of determinism and chance.

Collected Verse in five books by Richard Lung

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The Valesman.

*Published, 3 august 2014,
with ten per cent free sample, and available at Amazon [here](#).*

Dates and Dorothy.

*Published on 2nd september 2014.
And is available [here for the Kindle version](#).*

Also available from Smashwords [here, in epub format](#)

He's a good dog. (He just doesnt like you to laf.)

*Published on 14 november 2014.
And is available from Amazon [here](#).*

In the meadow of night.

*Published on 26 january 2015.
And is available from Amazon [here](#).*

Radical!

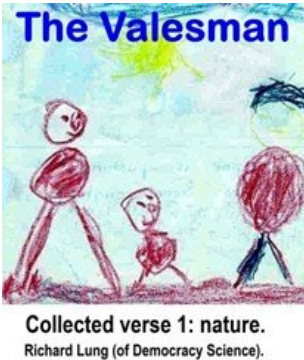
Published on 3 march 2015.

And is available from Amazon [here](#).

Also available from Smashwords in epub format [here](#).

If you read and enjoy any of these books of collected verse, please post on-line a review of why you liked the work.

While preparing this series, I made minor changes to arrangement and content of the material, so the descriptions of companion volumes, at the end of each book, might not always quite tally.



The Valesman

The first volume is mainly traditional nature poetry.
(160 poems, including longer narrative verse in section three.)
The nature poet Dorothy Cowlin re-connected me with my rural origins. Many of the poems, about animals and birds and the environs, could never have been written without her companionship.

The unity of themes, especially across the first two sections, as well as within the third section, makes this volume my most strongly constructed collection. I guess most people would think it my best. Moreover, there is something for all ages here.

1. How we lived for thousands of years.

Dorothy thought my best poems were those of the farming grandfather, the Valesman.

2. Flash-backs from the early train.

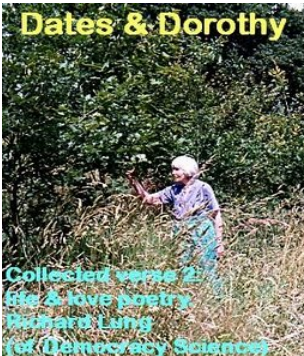
More memories of early childhood on the farm and first year at the village school.

3. Trickster.

Narrative verse about boyish pranks and prat-falls.

4. Oyh! Old Yorkshire Holidays.

Features playtime aspects of old rural and sea-side Yorkshire.



Dates and Dorothy

Book two begins with eight-chapter review of works, plus list of publications & prizes by Dorothy Cowlin.
(Seven of these chapters are currently freely available as web pages.)

This second volume continues with the second instalment of my own poems, classed as life and love poetry.

The Dates are historical and romantic plus the friendship of Dorothy and the romance of religion.

169 poems plus two short essays.

Prelude: review of Dorothy Cowlin.

Dates, historical and romantic, and Dorothy:

1. dates.
2. the Dorothy poems.

3. loves loneliness loves company.
4. the romance of religion.

The hidden influence of Dorothy, in the first volume, shows in this second volume. The first two sections were written mostly after she died. Thus, the first section, Dates, reads like a count-down before meeting her, in the second section, as prentice poet.

She was warmly responsive to the romantic lyrics of the third section. This was reassuring because some originated in my twenties. (I gave-up writing formal poetry during my thirties, to all practical purposes. There were only about three exceptions.) These surviving early poems, like most of my out-put, under-went intensive revision.

The fourth section probably stems from the importance attached to religion at primary school. Here humanitarian Dorothys influence only slightly made itself felt by her liking to visit churches.

The prelude review of Dorothy as a professional writer is freely available, at present, on my website: Poetry and novels of Dorothy Cowlin.

Nearly all the text is there, except a preface and last section, which I didnt up-load before losing access to the site in 2007.

The fotos, I took of Dorothy, are published for the first time.

The continued availability of my Dorothy Cowlin website is not guaranteed, so I welcome this opportunity to publish my literary review of her work, as an extra to volume 2.



He's a good dog. (He just doesn't like you to laf.)

The third book is a miscellaneous collection of 163 poems/pieces, with the arts and politics the strongest themes, as well as themes found in the companion books. There is also a story in section one, and a final short essay.

1. with children
2. or animals
3. never act
4. the political malaise
5. the lost
6. short essay:

Proportional Representation for peace-making power-sharing.

"A boot boy in the Great War," in the first section, is a sort of verse novela and dramatic poem with an eye on the centenary of the First World War. The idea stemmed from an incident related by Dorothy Cowlin (yet again). Her uncle was stopped flying a kite on the beach, because he might be signaling to the enemy battle fleet.
No kidding!

In this miscellany, previous themes appear, such as children, animals and birds. Verse on the arts comes in. I've organised these poems on the WC Fields principle: Never act with children or animals.

The fourth section collects political satires from over the years. The fifth section reflects on loneliness.

This volume is classed as of "presentatives" because largely about politics and the arts, with politicians acting like performing artists or representatives degenerating into presentatives on behalf of the few rather than the many.

However, the title poem, He's a good dog..., hints how eccentric and resistant to classification is this third volume. This title poem is based on a true war-time air incident. The good dog is also derived from a true dog, whose own story is told in the poem, the bleat dog (part of the free sample in volume 1).



In the meadow of night

The fourth volume is of 160 poems and two short stories on the theme of progress or lack of it.

part one: allure.

The allure of astronomy and the glamor of the stars.

part two: endeavor.

The romance and the terror of the onset of the space age and the cold war.

part three: fate.

An uncertain future of technologies and possible dystopias. Ultimate questions of reality.

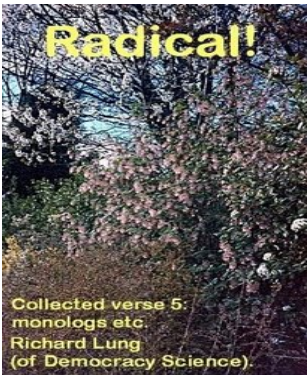
This fourth volume is of SF poetry. SF stands for science fiction, or, more recently, speculative fiction. The verse ranges from hard science to fantasy.

The literary tradition of HG Wells and other futurists exert a strong influence.

Otherwise, I have followed my own star, neither of my nature poet friends, Dorothy and Nikki, having a regard for SF poetry.

Yet science fiction poetry is a continuation of nature poetry by other means.

This may be my most imaginative collection. Its very diversity discourages summary.



Radical!

Volume 5 opens with a play about the most radical of us all, Mother Teresa: If the poor are on the moon...

This is freely available, for the time being, on my website: Poetry and novels of Dorothy Cowlin. (Performers are asked to give author royalties to the Mother Teresa Mission of Charity.)

The previously unpublished content consists largely of fairly long verse monologs, starting with artistic radicals, in "Symfonic Dreams," which is a sequence of The Impresario Berlioz, and The Senses of Sibelius.

Next, the intellectual radical, Sigmund Freud, followed by short poems on a sprinkling of more great names, who no doubt deserved longer. (Art is long, life is short.)

The title sequence, Radical! is made-up of verse about John Stuart Mill, Arthur Conan Doyle, George Bernard Shaw, HG Wells, George Orwell and JB Priestley.

Volume five ends with an environmental collection, largely available on my website: Poetry and novels of Dorothy Cowlin. However, those available verses have been more or less revised. Should that website close down, I hope the green verses and the Mother Teresa play can still be obtained in this volume five.

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